

# Proyecto de Mejoramiento de Semillas

Quarterly Report  
October 1998 - March 1999

Submitted to the  
United States Agency for International Development  
Under Contract No. 524-C-00-98-00025-00

By  
Development Alternatives Incorporated (DAI)  
7250 Woodmont Avenue, Suite 200  
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In association with  
Cargill Technical Services



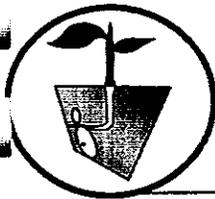
**PROMESA**

**DAI**

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Proyecto de Mejoramiento de Semilla

Development Alternatives, Inc



# PROMESA

Proyecto de Mejoramiento de Semilla

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July 31, 1999

Mr. Paul Crawford COTR  
USAID/MANAGUA  
AMEMB, MANAGUA, USAID  
Unit 2712 Box 9  
APO AA 34021

Subject: Quarterly Report  
Reference: Contract No. 524-C-00-98-00025-00

Dear Paul:

Pursuant to the referenced contract requirement, Development Alternatives, Inc. (DAI) herewith submits its Quarterly Reports on PROMESA activities during the fourth quarter of 1998 and the first quarter of 1999.

Should you have any technical questions regarding this submission, please do not hesitate to call me at 267-0454. Questions of a contractual nature may be referred to Ms. Margarita Cronin, Senior Contract Administrator (301) 718-8699.

Sincerely,

Kingsley Bash  
Chief of Party  
PROMESA/DAI

Enclosure: Quarterly report: April-June 1999

Cc: Paul Crawford, COTR  
John Sleeper, USAID Managua  
Martin Napper, Contracting Officer  
Marilyn Zak, USAID Mission Director  
Margarita Cronin, DAI, Sr. Contracts Administrator  
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SUMMARY

The objective of PROMESA (Proyecto de Mejoramiento de Semillas), implemented by Development Alternatives Inc., for USAID/Managua under contract no. 524-C-00-98-00025-00, is designed to increase the use of improved seed varieties, including hybrids, by small and medium-scale farmers in Nicaragua. To accomplish this objective, three sub-objectives must be achieved.

1. New, improved varieties introduced;
2. Private seed companies producing and marketing seed efficiently; and
3. Policy environment conducive to seed system development.

PROMESA was well underway on October 1 when the fourth quarter of 1998 began. A survey of seed users was being conducted to establish baseline conditions in seed markets, and provide the basis for monitoring project results. (Seed user survey results are summarized in Appendix 1).

The project began too late to plant on-farm trials in 1998, two new variety introduction activities were already underway. PROMESA was conducting a survey of NGOs and PVOs to identify potential partners for on-farm variety demonstrations. PROMESA was also negotiating with two universities - the Universidad Nacional de Agricultura (UNA) and the Universidad Centroamericano (UCA) - to establish an institutional home for its seed training program.

The seed policy program, advocating for appropriate seed laws and involving private seed companies in policy development, had established an office for the Secretary of the Consejo Nacional de Semillas (CONASEM). PROMESA had also held introductory meetings with the boards of directors of regional seed producer associations. Soon after PROMESA held a meeting of its major stakeholders on October 20, however, Hurricane Mitch hit Nicaragua.

Hurricane Mitch was one of the most devastating natural disasters to hit Nicaragua in this century. The dead and missing in Nicaragua were estimated in the thousands. Tens of thousands were left homeless. Rural infrastructure was destroyed, hindering recovery efforts. Further hardship resulted from the hurricane's impact on the agricultural economy. Approximately half of the national agricultural area suffered severe damage. Winds and flooding were particularly damaging to the low-lying, highly productive valleys, destroying a large portion of Nicaragua's commercial agriculture, including its seed supply. Approximately half of Nicaragua's maize seed supply, and two-thirds of its bean seed, were destroyed. In response, the MAG-FOR, INTA, and PROMESA organized a seed relief program to reestablish Nicaragua's seed supply and reassume its role as the major grain producer in Central America.

# PROMESA'S RESULTS FRAMEWORK

**SO: Use of Improved Seed Increased**

**I New Varieties Introduced  
CLIN I**

**II Private Seed Companies Growing  
CLIN II**

**III Seed Policies Improved  
CLIN III**

**Start-Up, Mgmt.,  
& Administration  
CLIN IV**

IA New Germplasm  
Accessed

IB Registration  
Streamlined

II A Improved  
Seed  
Promoted

II B Private  
Investment  
Increased

II C Seed Processing  
Capacity Increased

II D RSAs  
Promote Seed  
Companies

III A Seed Laws and  
Regulations Appropriate

IB1 Demonstration  
Protocols Adopted

IB2 INTA Roles  
Redefined

II A1 Mitch Seed  
Distributed  
CLIN V

II B1 Foundation  
Seed Adequate

II D1 DGS Roles  
Redefined

II D2 RSAs  
Increasingly  
Sustainable

III A2 Regional Seed  
Laws Harmonized

III A2 CONASEM  
Effective

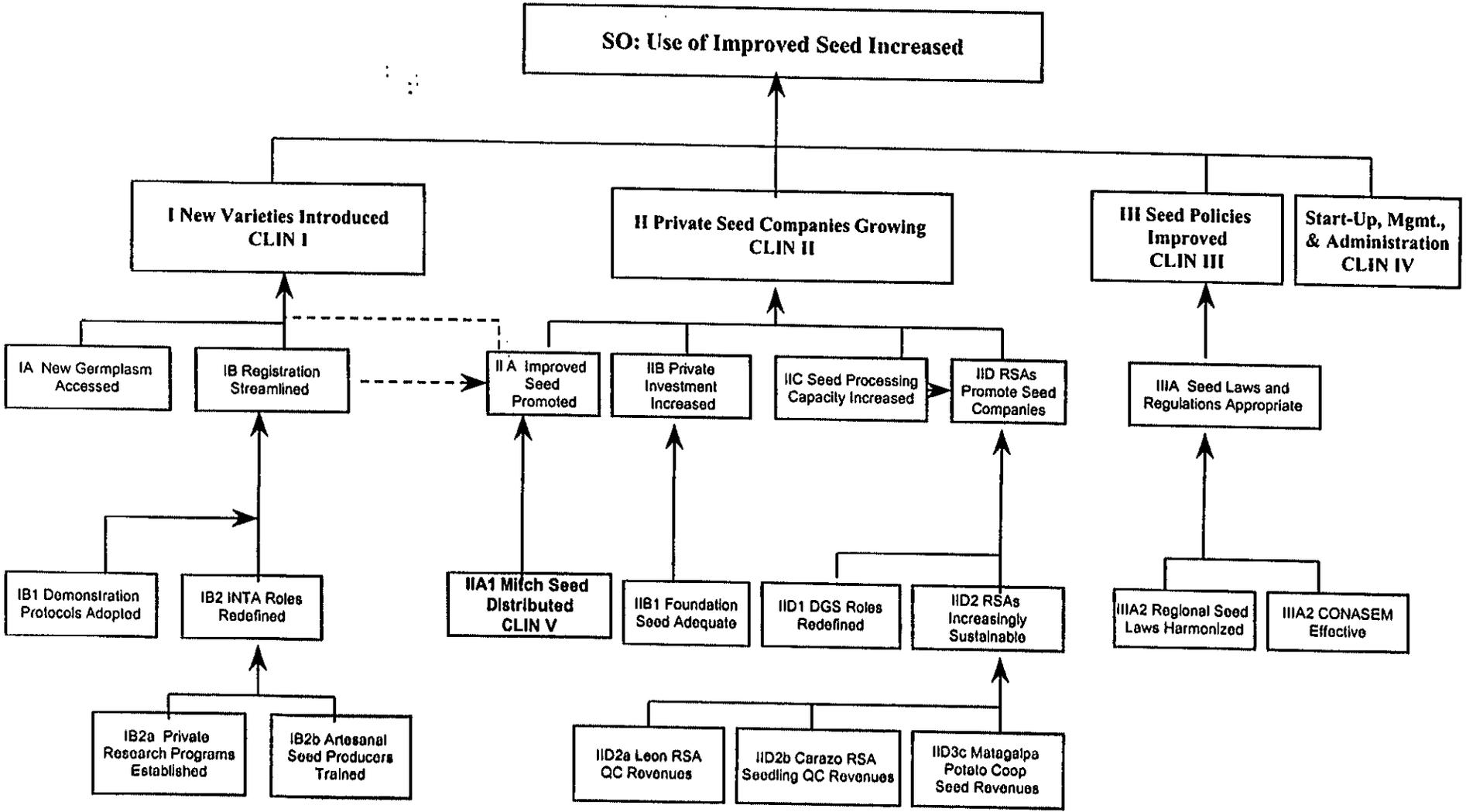
IB2a Private  
Research Programs  
Established

IB2b Artesanal  
Seed Producers  
Trained

II D2a Leon RSA  
QC Revenues

II D2b Carazo RSA  
Seedling QC Revenues

II D2c Matagalpa  
Potato Coop  
Seed Revenues



PROMESA entered into the program with the MAG-FOR and INTA specifically to produce seed of small red bean varieties only available in Central America. The INTA would continue to conduct its two-for-one bean seed multiplication program, in which small farmers receive one quintal of seed from the INTA at planting, and return two quintals at harvest. The MAG-FOR agreed to supervise as much seed production as possible. PROMESA guaranteed to pay a premium-price compared to market for high-quality bean seed.

The Emergency Seed Assistance Program (ESAP) complemented PROMESA's other activities, including its program to "graduate" artisanal seed producers into small-scale commercial seed businesses. ESAP provided a large-scale new variety demonstration on 200 small farms in Matagalpa and Esteli, and stimulated competition between seed processing plants. ESAP also increased the rate of new variety introductions by introducing two new bean varieties and two new maize hybrids. ESAP activities are included in the figure below as "Mitch Seed Distributed".

In January Aelita Moreira, an agronomist from Uruguay, developed a marketing plan for the seed produced by ESAP. In February Steven Mitchell, seed specialist from California, assessed alternative seed distribution systems. In March Bill Greenwood, who provides technical support to PROMESA from DAI's headquarters in Bethesda, supervised seed procurement from El Salvador and Guatemala. Moreira will return to Nicaragua in May to monitor the Red Cross distribution.

## SUB-OBJECTIVE I: NEW VARIETIES INTRODUCED

### IA. New Germplasm Accessed

Extensive, informal cooperation between public and private sector seed scientists and technicians already existed when PROMESA began in August 1998. PROMESA tapped into this informal network by attending conferences at CATIE in Costa Rica and Cristiani Burkhard in Guatemala. PROMESA continues to participate in, and encourage, the development of this network by conducting seed training workshops.

PROMESA also imported a new bean variety – H-46 – from El Salvador, and a bean variety called "Tio Canela" from Honduras. PROMESA also multiplied seed of improved varieties previously registered in Nicaragua, including bean varieties DOR-364, Esteli-150, and Esteli-90. PROMESA also multiplied a limited volume of "Tico," an unregistered bean variety popular with small farmers in Matagalpa.

### IB. Registration Streamlined

Nicaragua needs appropriate variety registration procedures that encourage new variety introductions. The registration procedures that existed when the project began required at least two years of field trials. The first year of "validation" trials involves conventional yield trials conducted in research plots to compare the yields of new varieties with standard varieties. In the second year, the trials are conducted on small farms to assess variety performance under normal farming conditions. After extensive discussions with PROMESA, the Direccion de Semillas agreed, in the regional "seed sector harmonization" meetings in Panama in January, to reduce the "validation" trial requirements from two years to two crop cycles. This two-cycle

validation process is still excessively prolonged, however, representing a barrier to new variety introductions. PROMESA advocates for the adoption of "fast-track" registration based on on-farm demonstrations, rather than formal validation trials. Fast-track registration relies on farmers to determine the adaptability of new varieties.

In February, PROMESA imported and distributed the Tio Canela bean variety to Mitch victims, although this variety is not registered in the Direccion de Semillas. PROMESA also imported and encouraged the INTA to register H-46, a new bean variety. PROMESA is assisting PROSELA, a seed company in El Salvador, to register two new maize hybrids for sale in Nicaragua.

#### IB1. New Demonstration Protocols Adopted

PROMESA will define and promote standard variety demonstration protocols in the next quarter.

#### IB2. INTA Roles Redefined

After Hurricane Mitch, PROMESA began training small farmers in bean seed production, thereby assuming one of the primary functions of INTA's Seed Unit. PROMESA contracted with approximately 200 small farmers to produce bean seed in the Apante crop cycle. The INTA and DGS agreed to provide technical assistance in seed production, but the logistical complexity of supervising 200 seed production fields exceeded their resources. They delegated authority to supervise the field operations of bean seed production to PROMESA technicians, thereby setting an important precedent in delegating seed certification to other organizations. Most of the 200 farmers PROMESA is training are in Matagalpa and Esteli, two of the areas severely damaged by Hurricane Mitch.

#### IB2a. Private Seed Research Expanded

Seed research programs suffered extensive damage by Hurricane Mitch. The MAG-FOR bean research in Carazo and maize research in Managua and other locations lost much of their foundation seed. CIAT and CIMMYT quickly resupplied them with much of the foundation seed needed for their seed programs, but private seed programs did not benefit from this support. For example, one private soybean seed research program was destroyed and suspended, at least temporarily. Private seed programs need assistance to recover before they can consider expanding.

#### IB2b. Seed Producers Trained

An efficient, national seed system requires personnel trained in a variety of technical areas ranging from seed production technologies to business management strategies. PROMESA provides training in all three of the major project sub-objectives: new variety introductions, growth of private seed companies, and improved seed policies. It trains seed technicians from NGOs, agricultural credit organizations, extension services, and other development organizations. PROMESA selected candidates for seed training from a pool of field technicians with experience working with small farmers.

During the first year of the project, expatriate specialists designed and delivered most of the training workshops, assisted by resident PROMESA staff to ensure that information was adapted to local conditions. PROMESA staff will conduct workshops in the second year, and assist in training during the third year. Eventually training will be conducted by local staff from UNA and other seed organizations. This approach ensures high-quality training while building local capacity with the result that workshops can be replicated in subsequent years without assistance from expatriate technical experts.

The first workshop, conducted by Aelita Moreira on February 4, 1999, was entitled "Seed Marketing." Moreira used PROMESA's 1998 seed user survey as an example of seed market research. She conducted another survey at the workshop to assess students' training needs. This survey served as another example of market research. The most frequently cited training need is for seed marketing (35 percent of responses), followed by quality control (17 percent), seed production methods (14 percent), storage and warehousing (13 percent), processing (11 percent), and new variety introductions (11 percent).

The second seed training workshop, conducted by Dr. Juan Narvaez from Antonio Narro University in Mexico on February 25-26, was entitled "Quality Control in Seed Production." Prior to the workshop, Narvaez inspected the major seed production plants in Nicaragua, and recommended ways to improve quality control in each of these facilities. He also conducted a seminar for seed company managers on total quality control (TQC) in seed production and processing.

## II. PRIVATE SEED COMPANIES GROWING

### IIA. Improved Seed Promoted

PROMESA's on-farm variety distribution program will begin next quarter in the Primera season.

#### IIA1. Mitch Seed Distributed

Hurricane Mitch arrived late in the Postrera crop cycle or, in some areas, early in the Apante cycle. The production of basic grains on hillsides, where many of the poorest farmers live, was heavily damaged. Approximately half of the basic food crops in Nicaragua were lost, leaving only limited supplies of grain for consumption until harvest of the first crop in 1999. Worse still, many farmers lost their seed stocks. Many did not have enough seed to plant in 1999. The late onset of the rainy season, and the decision of many farmers to defer planting until the Postrera season, further exacerbated the seed shortage. Special efforts were needed to rebuild the seed systems of small farmers, since most depend on their own farm-saved seed supplies. These small farmers are unable to recover from the destruction of their crops and seedstock without assistance.

In response to the needs of small farmers after the hurricane, PROMESA added a relief component to its original seed promotion program. In addition to the three major sub-objectives of the project, PROMESA organized a program, ESAP, to increase the supply of bean seed available to small farmers.

In collaboration with the MAG-FOR and INTA, PROMESA developed a plan to rebuild Nicaragua's seed supply for basic grain crops, and establish a revolving seed fund to address the recurring seed deficits after natural disasters. USAID provided \$600 thousand for this effort from the Office of Foreign Disaster Assistance (OFDA). (USAID modified its contract with DAI to accommodate these relief activities.) Most of the OFDA funds were used to buy seed. The rest was used for seed processing, transport, and storage. PROMESA spent an additional \$150 thousand, originally budgeted for purchasing seed equipment, for technical support in seed production, processing, and distribution.

In the Apante and Verano seasons, PROMESA contracted with approximately 200 small farmers to produce 3,000 quintals of seed of improved bean varieties. (In addition to the seed produced under contract, PROMESA bought 2,000 quintals of bean seed from other farmers.) PROMESA also contracted with two large farmers to produce 3,000 quintals of open-pollinated maize seed and imported 2,000 quintals of hybrid maize seed from three seed companies. It was distributed in "tech-packs" containing seed and fertilizer to more than 8,000 Mitch victims, i.e., small farmers who lost at least 60 percent of their Postrera crops in Hurricane Mitch.

#### IIB. Private Investment Increased

PROMESA's ESAP program will provide seed in "tech-packs" to more than 8,000 victims of Hurricane Mitch. It will also promote the use of improved seed, expand the domestic market for improved seed, and increase the incentives for investment in Nicaragua's seed sector.

In November, Cargill Technical Services consultant Dr. Lowell Gleason analyzed Nicaragua's seed law and regulations, and compared them to legislation in countries where public policy stifled or stimulated seed sector growth (see Appendix 2). Gleason's recommendations provide the basis for a report recommending changes in Nicaragua's seed law in order to stimulate investment.

#### IIB1. Foundation Seed Adequate

Shortly after Hurricane Mitch, the MAG-FOR and INTA decided to focus their resources on Apante grain production in Nueva Guinea, where they would benefit from potential economies of scale. They also planned to relocate INTA extension agents and reallocate budgets to Nueva Guinea. Unfortunately, these plans were not fulfilled. In the case of bean seed production, the INTA's best foundation seed stock was used in its "two-for-one" seed multiplication program in Nueva Guinea. Unfortunately, the extension agents assigned to this area had insufficient resources to provide field support. In mid-January, when PROMESA technicians toured seed production fields in Nueva Guinea, they concluded that the bean fields in Nueva Guinea were so isolated, the average quality of production was so poor, and the cost of procurement would be so expensive, that seed collection was unjustifiable. The high-quality foundation bean seed was lost. PROMESA refocused its seed production activities on Matagalpa and Esteli, where high-quality imported bean seed, and hand-selected locally-available bean seed was multiplied to become the source of foundation seed.

### IIC. Seed Processing Capacity Increased

It was apparent even at the beginning of the project that seed processing capacity was inadequate, particularly in northern and central regions of Nicaragua. Most seed processing plants are in the Occidente. After Mitch, the lack of bean seed processing capacity constrained the ESAP seed program. PROMESA contracted with a coffee processing plant in Matagalpa, where the owners had seed processing experience, and hired a seed production specialist to supervise bean seed processing operations.

Bean seed processing capacity was constrained by several factors. The seed cleaning equipment was antiquated and unable to sort seed effectively. Seed had to be hand-selected, a laborious and expensive process. Unexpected rainfall damaged some seed. Processing plant management was inadequate. PROMESA assigned a seed technician full-time to the plant, but progress continued to be slow. It became apparent that the facility could not process seed fast enough to meet the Red Cross seed distribution schedule. PROMESA will seek alternative seed processing plants.

### IID. RSAs Promote Seed Companies

In the short run, RSAs can increase seed processing capacity and promote the use of improved seed. In the long run, RSAs can increase private investment and stimulate seed sector growth. They can also apply pressure to public institutions to release new varieties and adopt policies that favor existing seed companies, and the formation of new ones.

APROSUR (Association de Productores de Semillas del Sur), the Regional Seed Association (RSA) in Carazo, is the first of PROMESA's primary seed producer associations to become legally established, with a "personaria juridica."

### IID1. DGS Roles Redefined

PROMESA believes that the proper role for the DGS is to serve as a regulatory agency that can intervene when commercial seed does not meet the standards advertised by seed companies. Instead, the DGS guarantees the quality of certified seed. Excessively strict certification standards, and the inability of the DGS to supervise seed production on many small and isolated farms, increase production costs and reduce the availability of certified seed. Several changes are needed to adapt the certification system to Nicaraguan conditions. The DGS needs to issue certification tags based on field inspection conducted by RSAs and seed companies. It needs to offer laboratory testing services. The DGS should also provide a means of arbitration or other means of resolving disputes between seed producers and consumers.

### IID2 RSAs Increasingly Sustainable

RSAs can provide important services to members. RSA promotional campaigns can expand the markets for improved maize seed by promoting the use of improved seed through mass media, agricultural fairs, and on-farm variety demonstrations. To provide these services on a sustainable basis, however, RSAs must become legally established, develop sustainable sources of income, charge for member services, and manage their financial affairs effectively.

RSAs can simultaneously develop sustainable sources of income and improve seed quality by providing certification and inspection services to seed producers. RSAs authorized to inspect and test certified seed can determine whether producers meet certification standards. Grants from organizations like Winrock and UESA to build warehouses and seed processing plants are important sources of funding in the short run. To provide these services on a sustainable basis, however, the MAG-FOR must delegate seed certification authority to RSAs, as discussed above in section IID1.

#### IID2a. Leon RSA Quality Control Revenues

To provide member services on a sustainable basis, the Leon RSAs must be legally established, charge for member services, and manage its financial affairs effectively. The RSA can improve the quality of seed and increase the volume of certified seed by providing certification and inspection services. With PROMESA support, the Leon RSA is qualified to provide field inspections for seed certification. PROMESA will develop a business plan and feasibility study for a seed processing plant in Leon to provide yet another source of income for this RSA.

The board of directors of the Leon RSA began meeting on a regular basis during this quarter.

#### IID2b. Carazo RSA Seedling Quality Control Revenues

Coffee is the primary crop produced by small farmers in Carazo. Many coffee producers also plant fruit trees to shade coffee and provide an additional source of income. Many coffee groves and fruit orchards are more than 20 years old. Yields have declined. Some of the coffee and fruit varieties used are antiquated and should be replaced with new, improved varieties. Renovation is a long-term and expensive process, however, involving high opportunity costs in production. Most farmers lack credit for large-scale renovation, so they periodically renovate a portion of their trees.

The Carazo RSA consists of 24 members. Eighty percent are nurserymen. PROMESA will promote coffee grove and fruit orchard renovations and generate income for the newly formed RSA in Carazo by subsidizing high quality seedlings sold to local small farmers.

#### IID3c. Matagalpa Potato Cooperative Seed Revenues

Most seed producers for basic grain crops in Matagalpa and Esteli are small farmers who do not produce certified seed. Seed certification services offered by other RSAs to their members are not highly valued by RSA members in Matagalpa and Esteli until they "graduate" from artisanal to commercial production.

Potato seed tubers and true potato seed, on the other hand, can provide important sources of income for RSA activities. PROMESA will provide technical assistance for two types of seed potato production. Mini-tubers purchased from INTA will be planted in June 1999. After further multiplication they will produce certified seed for commercial potato production for sale in June 2000. A pending donation of true potato seed, to be propagated into seed for commercial potato production, will provide another source of high-quality seed stock and income for the Matagalpa Potato Cooperative. Proper use of true potato seed requires specialized training in

seed potato production. PROMESA has identified technicians trained at the Centro Internacional de Papas (CIP) in Peru to lead the research and training program required to use true potato seed properly. The primary beneficiaries of true potato seed will be the members and the potato growers' cooperatives, which may serve as PROMESA's regional seed association in Matagalpa. PROMESA will also provide true potato seed to INTA and APENN for research and demonstration trials.

### III Seed Policy Improved

At PROMESA's stakeholders' meeting in October 1998, Minister Mario De Franco argued that Nicaragua has comparative advantages in agriculture, and potential competitive advantages in seed production. Historically, Nicaragua was the major grain producer in Central America. It can become the major seed supplier in Central America. Favorable international seed trade conditions exist in Central America due to a World Bank program "harmonizing" national seed laws and regulations. Before Nicaragua can assume its role as an important producer of seed for international markets, however, its seed law and regulations must be revised to favor investment in seed production in Nicaragua. RSAs can also be effective advocates for the changes needed in Nicaragua's seed laws and regulations.

#### IIIA. Seed Laws and Regulations Appropriate

One obstacle to seed company growth and investment is the difference between national seed laws and regulations in Central America. Another obstacle is the high transaction cost of investment. Poor market information, lack of enforcement of contracts and intellectual property rights, and other factors increase investment risks. PROMESA will reduce investment transaction costs by publishing market information from seed user surveys. It will provide technical support to legislators and advocacy for a plant variety protection law to protect intellectual property rights over seed and other plant propagation products. It will foster relationships between seed companies, thereby increasing access to foreign capital and seed markets.

#### IIIA2. Regional Seed Laws Harmonized

The likelihood of the National Assembly revising the seed law, passed only last year, is unknown. Nevertheless, PROMESA will assist the Government of Nicaragua in understanding the investment implications of the seed law, and anticipating its effects on the national seed industry. If the new seed law is revised, it can have a major impact on investment and on project results. However, project results in the area of national seed laws and regulations depend on factors beyond PROMESA's direct control. Nevertheless, they are critical to project objectives, and therefore merit project resources.

PROMESA completed its initial assessment of seed laws in Central America, concluding that the 1999 seed law will constrain the development of a national seed industry, as well as creating serious obstacles to foreign investment. This desk study will be used as a basis for justifying changes in Nicaragua's national seed law.

### IIIA1. CONASEM Effective

Before the passage of the 1998 Seed Law and PROMESA's start-up in August 1998, DAI considered the CONASEM, defined under the 1998 law but not yet created, to be an appropriate institution to advocate for the private seed sector. The need for an organization to represent the interests of the private seed sector remains, but the National Assembly's decision to give the public sector a supra-majority in CONASEM effectively diminishes the potential effectiveness of this institution as a representative for the private seed sector.

### IIIA2. Regional Harmonization of Seed Laws and Regulations

For Nicaragua to establish itself as a major seed producer in Central America, it needs access to regional seed markets and private investment. National seed markets in Central America are small. Differences in national certification standards, variety protection measures, and trade regulations serve to isolate national markets and reduce incentives to market seed in the region. PROMESA participates in the World Bank's regional program to harmonize seed laws and regulations in Central America. If this effort is successful, varieties and hybrids registered in one country will automatically be registered in the others. Proprietary varieties will be protected, and certified seed will be sold without restriction throughout the region. Seed harmonization will improve the accessibility of the Nicaraguan seed markets to foreign suppliers and increase its attractiveness to potential investors. New legislation is needed to improve access to regional markets and create a policy environment that stimulates the use of improved seed. Access to new seed varieties and markets require harmonization of seed registration requirements, certification standards, and phytosanitary regulations.

### HIGHLIGHT OF FUTURE EVENTS

- Standard protocols for on-farm demonstrations.
- New, imported bean varieties and maize hybrids introduced.
- Variety registrations.
- Advocacy for plant variety protection legislation.

## Appendix 1

## ARTISANAL SEED SURVEY

## - SUMMARY OF RESULTS -

Artisanal seed production is a method by which small farmers produce their own seed using improved seed stock and quality control methods that ensure good seed quality. Increased artisanal seed production is required for small farmer development in Nicaragua. PROMESA's strategy for increasing artisanal seed production is to work with the MAG-FOR's Direccion de Semillas and INTA's Unidad de Semillas to provide technical support and training to seed organizations in the private and public sectors, to increase the volume of high quality, artisanal seed. Organizations interested in artisanal seed production include PVOs, NGOs, and producer associations. PROMESA will replicate the successes of these organizations through training workshops, on-farm trials, and field days.

Artisanal seed production also provides small farmers an opportunity to sell seed without incurring the high costs of supervision by the MAG-FOR's Direccion de Semillas. To rapidly increase the commercial availability of artisanal seed, the number of qualified seed specialists trained in seed marketing must increase. PROMESA's strategy for increasing the commercial availability of artisanal seed has multiple components. Short term objectives include establishing cooperative agreements with selected NGOs and producer associations to undertake pilot projects in artisanal seed production and marketing, and organizing a consortium of organizations interested in undertaking artisanal seed production, to investigate market conditions and sources of financial and technical support. A medium-term objective is to offer formal training in artisanal seed marketing and distribution.

Recommendations:

- Organize a consortium of PVOs, NGOs, and producer associations, including CARE, CRS, World Relief (or its successor), FIDER, INPRHU, UCOOM, Technoserve, and UNAG, to investigate market conditions, and sources of financial and technical support.
  - Establish a cooperative agreement with at least one of these organizations to begin providing training in artisanal seed production and marketing beginning in 1988.
  - Organize a pilot artisanal seed production program with at least one of these organizations to produce high quality seed without the supervision of the MAG-FOR's Direccion de Semillas or the INTA's Unidad de Semillas.
1. Expand PROMESA's original proposal - to provide training workshops in seed production and marketing - into a practical, hands-on, extension program involving one or more local and foreign universities, local and foreign seed producers, and seed consultants for specialized training and practical experience. This training will take place in Managua in the first year of the project, and will be expanded to other locations in Nicaragua in subsequent years.

### Importance of Artisanal Seed Production

The vast majority of the seed planted in Nicaragua is produced on the same farms where it is subsequently sown. Small farmers save a high proportion of their seed, so they have much to gain from improving the quality of farm-saved seed. Given their limited resources, however, many small farmers cannot afford certified seed and other cultural practices needed to take advantage of the yield potential of improved varieties. Nevertheless, the introduction of improved varieties into the traditional agricultural sector is essential to rapidly increase basic grain and oilseed production. Small farmers need a cheaper source of high quality seed.

Artisanal seed production, combined with traditional production technologies and innovative cultural practices requiring only modest investments, can significantly increase the productivity of small and medium size farms. A primary responsibility of PROMESA is to upgrade the seed production, processing, and storage capabilities of small farmers. It must also develop new, more efficient distribution systems for artisanal seed, and promote them as primary channels for introducing improved seed varieties of basic grains and oilseed crops.

### B. "Artisanal Seed Production" Defined

The term "artisanal seed production" is used synonymously with "cottage seed production" in the USAID contract 524-C-00-98-00025-00 defining the Proyecto de Mejoramiento de Semillas (PROMESA). Since considerable confusion exists concerning the term "artisanal seed production," it requires clarification. Artisanal seed is not a seed category, like certified, authorized, or "apta" seed. Instead, it is a process for producing high quality, farm-saved seed. Artisanal seed production methods are similar to those used to produce certified and authorized seed; however, artisanal seed is not produced under the supervision of the Direccion de Semillas. Artisanal seed does not necessarily differ from certified, authorized, or other farm-saved seed; its genetic purity, germination rates, and other quality control indicators may be equivalent. However, artisanal seed is typically at least one generation removed from registered seed, and sometimes several generations removed, whereas certified seed is produced from registered seed. Artisanal seed production may involve selecting individual plants, or portions of production fields, for seed production. Artisanal seed may be stored under more favorable conditions than common grain. Another difference between artisanal and other seed is that under the new seed law, only certified, authorized or "apta" seed can be sold commercially.

The production and sales of certified, authorized, and apta seed are highly regulated in Nicaragua. For seed to be certified, the Direccion de Semillas must supervise field operations that affect seed quality, monitor germination rates, and test for foreign matter, noxious weeds, and other seed quality characteristics. Under the new seed law, the MAG-FOR's Direccion de Semillas is obligated to guarantee the quality of commercial seed. Most seed production and sales, including artisanal seed, occur in the informal sector, which is largely unregulated.

The Direccion de Semillas does not regulate artisanal seed production; however, it is sometimes grown under the supervision of the INTA's Unidad de Semillas, or by seed technicians in PVOs, NGOs, and producer associations. Artisanal seed production methods are designed to meet the quality control standards of commercial seed production. However, artisanal seed production, processing and storage usually involves relatively simple, non-mechanized technologies. The genetic purity of artisanal seed may be lower than commercial

seed, since artisanal seed may be produced with farm-saved seed selected from commercial production fields (see Figure 1). Also, the foreign matter and noxious weed content of artisanal seed may be higher than commercial seed; however, the germination rates are usually similar, and artisanal seed is much less expensive, since it involves less mechanical cleaning, bagging, and supervision by government inspectors. Artisanal seed production is an economical way to improve the quality of the seed for small farmers, and a good method for introducing improved varieties into traditional farming systems.

### PROMESA's Contractual Obligations Concerning Artisanal Seed Production

USAID's contract with PROMESA specifies that the project will not provide technical advice directly to artisanal seed producers. Instead, PROMESA is responsible for training the field technicians of producer organizations, small farmer development projects, PVOs, NGOs, and public seed institutions. These technicians will, in turn, transfer artisanal seed production methods to small and medium size farmers.

PROMESA will focus its artisanal seed activities in regions where the chances of success are highest. The opportunities are greatest where 1) small farmers are already organized into producer associations, cooperatives, etc., or 2) PVOs, NGOs, and the INTA are already providing technical assistance in artisanal seed production.

PROMESA's contract with USAID states that technical advice and training in artisanal seed production will be provided "on a crop-specific basis," based on differences in the needs, constraints, and opportunities of each of the major grain and oilseed crops. For example, small farmers produce approximately one-third of Nicaragua's soybeans, but large farmers produce almost all soybean seed. Therefore, the demand for artisanal production of soybean seed is relatively small.

Like soybeans, the final market for sesame seed is concentrated in the hands of a few oilseed processors. This degree of concentration facilitates technology transfer and financing for seed production and sales. Two factors favor artisanal production of sesame seed: 1) most commercial sesame production occurs on small farms, and 2) the quality of most sesame seed is poor. Another factor detracts from the potential for artisanal production of sesame seed, i.e., sesame acreage has declined in recent years, and current demand for sesame seed is weak. In the medium term, however, the potential for artisanal production of sesame seed may be significant.

Rice is produced on both large and small farms, but the demand for rice seed is different in each market. Some large rice farmers produce their own seed under artisanal conditions, or merely use commercial grain as seed. Others purchase artisanal seed. Given the current low price of commercial rice, there is little incentive to improve seed production methods. When grain prices improve, many large rice farmers will be willing to purchase certified seed. Small farmers' demand for rice seed is expected to be less sensitive to changes in rice prices, so they will be slower to convert from farm-saved to certified seed. However, artisanal rice production methods can raise the quality of their farm-saved rice seed, and introduce new varieties, at relatively low cost.

Most bean and OP maize is produced on small farms using farm-saved seed. Due to the technical characteristics, however, the potential for artisanal seed production and distribution of the two crops differ significantly. The isolation requirement for high quality seed of OP crops like

maize is more difficult to meet than that of self-pollinated crops like beans. Also, maize seed can be stored relatively easily, without suffering rapidly declining germination rates, so farm-saved maize seed can be saved from one year to another. The germination rates of bean seed declines more rapidly, so many farmers prefer to purchase seed or commercial grain produced in the "Apante" season.

### Current Artisanal Seed Production Programs

The flow of seed through Nicaragua's seed system is presented schematically in Figure 1 below. Basic seed from the INTA or private seed companies is multiplied to become registered seed. Much of the registered seed is used to produce certified seed; however, INTA multiplies some of its registered seed for use in its "two-for-one" artisanal seed production system.

Two important short-term opportunities for cooperative artisanal seed programs. One is with the Union Nacional de Agricultores (UNAG). In the medium-term, regional seed associations (RSAs) will also be important in promoting artisanal seed use.

- UNAG produces certified and non-certified rice, bean, and vegetable seed on a small scale in El Sauce, Esteli, Leon and Chinandega. UNAG proposes to bypass the MAG-FOR's expensive supervision requirements for certified seed, by training artisanal seed specialists. UNAG proposes to form associations of small producers to maintain quality standards and promote artisanal seed use.
- The newly reformed regional seed producers associations may represent additional opportunities to promote artisanal seed production. However, these organizations are in early stages of development, and currently have no active programs promoting the production or marketing of either commercial or artisanal seed.

INTA's artisanal seed program is based on a "two-for-one" system providing one quintal of seed to qualified farmers to grow artisanal seed; repayment is in the form of two quintals of seed in repayment at harvest. INTA's artisanal seed program focuses on red beans, but also produces small quantities of OP maize, sesame and rice seed.

There are several opportunities for cooperative activities between PROMESA and the INTA. PROMESA can train provide training to INTA technicians. INTA seed specialists can serve as instructors in PROMESA's training programs. PROMESA can develop and test models for organizing seed producers into associations for marketing, technical support, and financing. PROMESA can also help INTA promote grain and oilseed varieties, upgrade INTA's seed distribution system, and help INTA rapidly expand artisanal production.

Some seed companies, PVOs, NGOs, producer associations, and farm cooperatives produce seed under the supervision of the Direccion de Semillas; if it meets predetermined quality standards, it is tagged as "apta" seed. If it does not meet the quality standards, it is sold as seed in the informal market, or as mere grain. Many of these types of organizations are not registered with the Direccion de Semillas, and do not seed its supervision.

PROMESA proposes to expand the definition of "artisanal seed production" to include seed produced by qualified seed specialists, including individual farmers, technicians working for PVOs, NGOs, producer associations, and farm cooperatives. The areas where artisanal

seed production could potential occur are distinguished by a dotted line in the figure below. These include the following types of high quality seed produced by qualified seed specialists.

- Non-tagged seed from INTA's contract seed production program;
- Non-tagged seed produced by PVOs, NGOs, cooperatives and producer associations;
- Non-tagged seed produced by private seed companies;
- Seed selected and processed from commercial grain production fields.

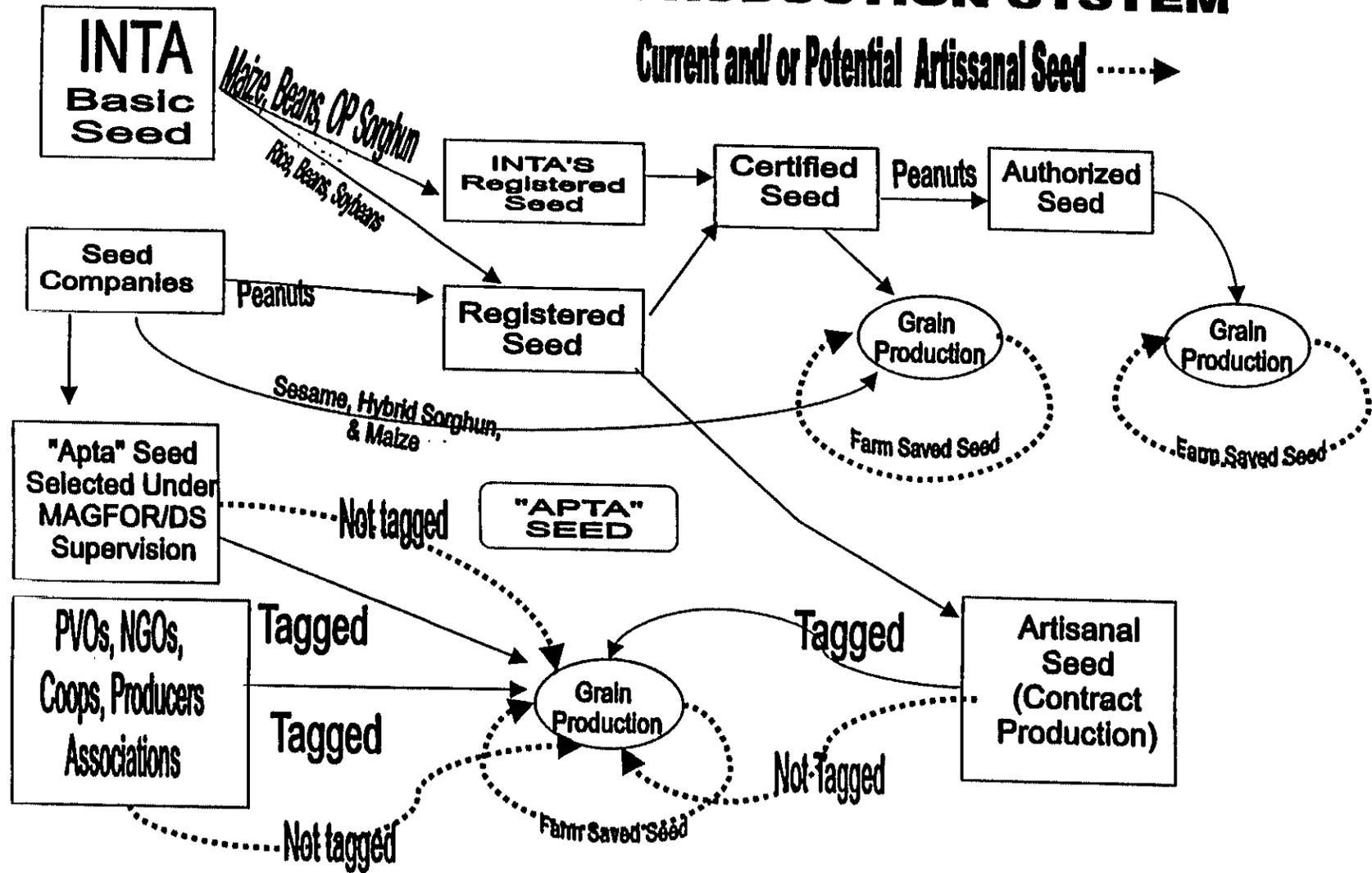
#### Artisanal Seed Production and Promotion Strategy

PROMESA propose to expand the definition of "artisanal seed production" to include seed produced under the supervision of seed specialists, including those who successfully complete a series of PROMESA workshops. These specialists would include technicians working for PVOs, NGOs, and producer associations, as well as those working for public institutions like INTA's Unidad de Semillas and the MAG-FOR's Direccion de Semillas. In the remainder of this report, the term "artisanal seed production" will pertain to all seed grown under the supervision of seed specialists to meet high quality control standards.

PROMESA's approach to increasing artisanal seed production depends on the successful formation of cooperative training and technical support agreements with small farmer development projects. PROMESA will provide technical training to technicians working on development projects, in exchange for their active promotion of artisanal seed production methods.

In order for this approach to achieve measurable results by the end of the project, PROMESA must begin immediately to establish these cooperative agreements with PVOs, NGOs, and producer associations. PROMESA's approach for artisanal production involves four phases, described in Table 1 below. This report is a result of the first activity in Phase I – interviews to identify organizations with seed programs for small farmers, and an assessment of their interest in promoting artisanal seed production.

# FIGURE 1. SEED PRODUCTION SYSTEM



PVO and NGO Seed Programs

The principal opportunity to establish cooperative programs to promote artisanal production of improved seed varieties are with the following organizations. Their areas of operation are summarized in Table 3 below. The scopes of operation of these organizations are summarized in the table below.

1. CARE
2. Catholic Relief Services (CRS)
3. Fundación de Investigación y Desarrollo Rural (FIDER)
4. Instituto de Promoción Humana (INPRHU)
5. Technoserve
6. Unión de Cooperativas Multisectoriales (UCOOM)
7. World Relief (Auxilio Mundial) or its successor

<u>Zone</u>	<u>Name</u>	<u>Organizations</u>	<u>Small Farmer Clients</u>
I	Esteli	CRS/FIDER	NA
		CENADE	300
		Technoserve	NA
		Auxilio Mundial	NA
		DED (Servicio Alemán)	
	Madriz/N.Segovia	INPRHU	NA
	Technoserve	NA	
	Auxilio Mundial	NA	
	Somoto/Madriz	CRS/INPRHU	520
II	Leon/ Chinandega	CRS/Assoc. G. Giron	320
		Technoserve	NA
		UCOOM	
		Cooperación Austríaca IIZ	
IV	Matagalpa	CRS/ADAC	520
		Technoserve	NA
		CARE	
IV	Jinotega	Technoserve	NA
V.	Boaco	INPRHU	NA
		IIZ	1000
		UNAG	80

Appendix 2

A STUDY OF CENTRAL AMERICAN SEED LAWS

BY DR. LOWELL S. GLESON

Summary

1. The Law 280 puts the government bureaucracy in complete control of the seed industry. Experience in other countries has shown that such an arrangement of responsibilities does not encourage production of new germplasm or strong seed companies. This law will drive up the cost of seed and increase the use of artisanal seed.
2. Law 280 forces a top-down type of organization that is poorly adapted to the seed business. In seed production many decisions must be made in the field. A top-down management does not fit such a decision process.
3. The control and inspections authorized in law 280 will discourage international seed companies. They will fear losing control of their lines and not be encouraged by the slow pace of market penetration.
4. Nicaragua must have access to the new germplasm available from international seed companies to develop a vibrant seed industry. It is expensive and time consuming to develop superior lines so Nicaragua should actively pursue the germplasm of the international seed companies.
5. Provision in the seed laws should be made for a strong grower organization that can regulate much of the seed trade. Producer and grower regulation of seed laws will result in a stronger and more active seed industry
6. Law 280 seems to imply a distrust of private business. To achieve a strong seed industry, the private sector must be an active partner in developing and regulating the seed trade. By enlisting the private sector in the seed industry large amounts of capital will flow to the improvement of Nicaraguan lines and varieties.
7. Suggestion made in the discussion could markedly improve the regulation of seed production in Nicaragua. Turkey, Chile and Peru are examples of countries where opening the seed production to private industry has been successful.