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Panama Agricultural Technology Development  
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For The Period May 1, 1983--- July, 1 1983 \*

\* This shortened reporting period will enable return to a 90 day cycle based on the original July 1, 1982 contract initiation.

## DESCRIPTION OF PAST, CURRENT, AND FUTURE ACTIVITIES OF PERSONNEL

### Dr. Pedro Argel, Pasture Agronomist

Dr. Argel's activities during the reporting period have primarily centered around the coordinating and initiating of previously planned research. Visits have been made to sites previously selected for research work. These visits have also provided opportunities to offer technical assistance to IDIAP technicians and to further elaborate cooperative work planned for the future and to assist them with on-going research. Planning trips have been made to a number of IDIAP'S primary research areas including; Bugaba, Calabacito, and Los Santos. A weed control experiment was established in a collaborating farmer's field in Bugaba with the active participation of IDIAP researchers. This experiment is planned to last six months and it is expected to provide information over control of broadleaved weeds and the herbicide selectivity of native legumes.

Dr. Jose Toledo, Coordinator of the Tropical Pastures Program at CIAT, visited Panama on May 23-27 to bring a large quantity of grass and legume germplasm to be used in experiments planned in the future. These seed stocks included 10 grass genotypes of the genera Andropogon, Brachiaria, Panicum, and Cynodon and 92 ecotypes of Panicum maximum. The seed supplies also included 192 genotypes of tropical legumes of the genera Stylosanthes, Pueria, Zornia, Centrosema, Desmodium, Aeschynomene, and Leucaena. A number of vegetative clones of Brachiaria spp. were also introduced to Panama as part of this shipment and altogether, the introduction of this germplasm alone, aside from the research planned with it in the future, is considered a major step forward for the Panamanian livestock sector.

Dr. Toledo also had an opportunity to visit experimental sites in the Western and Central Provinces and review Dr. Argel's experimental plans with him. Discussions were also carried out with the National Bank of Panama which has an active pasture improvement program underway.

Considerable time has been directed toward further planning and discussions with IDIAP researchers of the work planned for Gualaca. Land has been prepared and planting of 2.0 ha. of Andropogon gayanus, 1.0 ha. of kudzu, 0.5 ha/ of Centrosema macrocarpum and 0.5 ha. of other promising species of Stylosanthes, Desmodium, Brachiaria, Panicum, Centrosema and Zornia. In discussions with IDIAP researchers, Dr. Paladines, a consultant from CIAT and Dr. Toledo of CIAT have defined the details of planned grazing experiments of Type C and D. Twenty hectares have been chosen for these studies and plans are underway for the initiation of the first grazing (treatments) in December.

Two sites have been selected for seed production of Brachiaria decumbens and Brachiaria humidicola in the Finca Chiriqui of IDIAP. A total of 2.2 and 1.0 ha. respectively, are set aside and fenced following a management plan for seed production. The plots have good plant populations and are now beginning to flower. Potential yield information in these circumstances is unknown and these trials will provide important information over seed production potential of these species.

As a result of discussions held with the National Bank and the University of Panama it was agreed to initiate a promotion program in the production of Andropogon gayanus which was introduced into Panama in 1977. This species has shown good adaptation to diverse environments from the cattleman's point of view and a large scale propagation program is currently under review.

Dr. Argel is considering an additional experiment to complement earlier planned work. This experiment would be collaborative work with the Dr. Tom Scott on pasture fertility requirements, and would be carried out as part of other experiments planned for Galabacito. The objective is to gain information over the fertility requirements of germplasm in experiments and to take advantage of the structure in place at Galabacito to conduct grazing trials.

Additional time during the reporting period has been directed toward the construction of a storage area in Gualaca for experimental seed stocks to be used at a later date for trials over seed quality. Dr. Argel has also planned and arranged a greenhouse area for experimental seed multiplication. It is hoped that these improvements will improve the capacity of IDIAP to store and control seed quality of experimental materials and to conduct basic greenhouse research.

Dr. Argel's work in the near future will continue with the experiments in progress and the initiation of other planned experiments. He plans to attend the Annual Meetings of the American Society of Agronomy in Washington, D.C. in August and will also visit Rutgers University at that time to meet with Rutgers faculty and administrators.

#### Dr. Mark Gaskell, General Agronomist

Dr. Gaskell's work during the reporting period has been concentrated in two geographic areas of Panama. He has been working closely with Ing. Cruz Miranda of IDIAP, technicians of the cooperative organization, COAGRO, and farmer/members of the cooperative, La Libertad, in El Valle de Anton. The focus of this work has been the establishment of research trials on farmer's fields to resolve some of the production problems of onions.

Onion is an important commercial crop for these farmers and a priority vegetable crop for research in Panama. Onion problems in El Valle and in the other onion growing areas of Panama include: varietal adaptation, soil management, disease control, seedbed preparation, etc. There is, however, great interest in extending the production of onion into more of the rainy season and this includes additional problems related to curing, drying, and storage.

Dr. Gaskell and Ing. Miranda have thus far designed and planted 12 experiments in the fields of collaborating farmers. Seven different onion genotypes have been included in varietal trials planned for different planting dates. Newer experimental germplasm, selected for improved storing capability, has been requested for inclusion in these experiments also. The establishment of additional crop management experiments is continuing and the plan is for Ing. Cruz Miranda to slowly assume primary responsibility for the work in the area as Dr. Gaskell's focus shifts to priority areas in Chiriqui. The farmers in the El Valle area are enthusiastic and this work with COAGRO has stimulated COAGRO to seek a general technical assistance agreement with IDIAP leading to research/technical assistance work in other areas of the country. This arrangement is particularly important because of IDIAP's current budgetary limitations in that COAGRO is contributing toward research support. It also clearly demonstrates IDIAP's ability to respond to the concerns of farmers and other members of the Panamanian agricultural sector.

Dr. Gaskell has also initiated work in three of the eight priority areas in Bugaba, Renacimiento, and Baru Districts in Chiriqui Province. IDIAP and Rutgers/Cornell administrators have proposed relocating Dr. Gaskell to this area to increase his research and training effectiveness. While this proposal is pending USAID/Panama administrative consideration, he will be travelling to the area and spending five days there every other week. Dr. Gaskell has worked closely with IDIAP's Western Crops Coordinator, Ing. Jose Roman Arauz, and other IDIAP area directors in establishing initial research priorities in the areas. Six new farmer collaborators were identified for on-farm work with onion in the Cerro Punta/Volcan area in Dr. Gaskell's initial two trips to the area. Work with maize is in progress on farmer's fields in the Caisan area and Dr. Gaskell will work closely with Ings. Arauz, Acosta, and De Gracia to extend and intensify the agronomic work with maize and dry beans. Subject matter focus areas with sorghum and maize in collaboration with Ing. Delia Jimenez in the Alanje area have been identified but specific farm sites are pending an initial diagnostic study which is in progress.

Dr. Gaskell and IDIAP technician, Franklin Atencio, have initiated other onion management studies at the Cerro Punta research station to determine critical factors in seedbed management during the rainy season and the comparative advantages of different fungicide treatments. Two types of low cost passive solar collectors have also been constructed using materials available locally and these collectors are being evaluated for their potential use as on-farm onion drying facilities during the rainy season. Efforts are underway to build and evaluate a rolling injection planter based on plans developed at IITA in Nigeria, for use by small farmers in the Caisan area for planting dry beans under reduced tillage conditions.

Dr. Gaskell's future work will involve extending and intensifying the work initiated in Caisan, Cerro Punta, and Alanje in Western Panama. He will also attend the American Society of Agronomy meetings in Washington, D.C. in August and he will visit Rutgers University at that time to meet with departmental colleagues and university administrators.

#### Dr. Tom Scott, Soil Productivity Specialist

Dr. Scott assumed primary responsibility for IDIAP's soil testing laboratory in mid-May to allow Ing. Benjamin Name of IDIAP to attend a training workshop at the International Atomic Energy Commission in Vienna, Austria. As part of this responsibility, Dr. Scott assumed the task of providing soil fertility recommendations based soil analysis of samples arriving from all parts of Panama. During the month of May for example, approximately 200 soil fertility recommendations were made to Panamanian farmers.

In early May, Dr. Scott and Ing. Name of IDIAP prepared a report for IDIAP administrators regarding the soils laboratory. The report included references to the structural problems at the soils laboratory (cracks in the ceiling and walls and a leaking roof), old analytical equipment--some of which is not functioning, and the fact that important analyses are not being made because of the lack of equipment.

In working closely with the soil testing operations on a regular basis, Dr. Scott has identified several important fundamental procedural problems which are severely restricting IDIAP'S soil testing program. Some of these problems are related to equipment and facility needs that are already planned, but a series of emergency steps will need to be taken in the short term to keep the laboratory functional. Discussions are presently underway between IDIAP technicians and administrators as to the most appropriate strategy for keeping the laboratory operating in the near term.

Dr. Scott's research work on farmer's fields in the Sur de Veraguas area is continuing. Visits were made to the plots at Los Polancos and San Juancito to take care of plot maintenance. Dr. Scott has also worked with IDIAP researchers, Ings. Him and Alguilar in the design of field fertilizer experiments in rice, yuca, and ñame. Dr. Scott and Dr. Argel have also planned fertility trials with pasture species on acid, high aluminum soils.

Dr. Scott and Dr. Jorge Jonas of IDIAP have arranged for a visit by Drs. Beinroth and Eswaren of the International Benchmark Sites Network (IBSNAT) in late June to see some representative soil sites in Panama and to discuss with IDIAP administrators the possibility of future interaction between IDIAP and IBSNAT including the possibility of a soil classification training school in Panama.

Dr. Scott will continue to work at resolving the short and long-term problems of the soil testing laboratory. He will also be continuing with on-going experimental work in the Central Region and will be meeting with Dr. Gaskell in the Caisan area to discuss soil fertility studies for the area. He plans to attend the American Society of Agronomy meetings in August and will also visit Cornell and Rutgers to meet with colleagues and project administrators.

#### RESULTS OF RUTGERS/CORNELL MEETINGS IN THE U.S.

The project technical-administrative committee from Rutgers and Cornell met at Rutgers University in mid-June to discuss a number of project related matters. One important area of discussion involved consideration of technical assistance requests which have been made by IDIAP Director General, Rodrigo Tarte in a number of subject areas. The timing of these technical assistance visits relative to the work in progress in Panama is an important area of concern. The committee will respond to Dr. Tarte in the near future to initiate planning for these technical assistance consultancies.

The committee will meet again at Rutgers in August when Drs. Argel, Gaskell, and Scott will also be present.

#### AREA-FOCUSED RESEARCH PROGRAM.

The three technical specialists are attempting to concentrate their efforts in the priority areas. Budgetary restrictions within IDIAP limited this activity in early 1983, but USAID/Panama is reviewing a proposal for a supplementary budget to allow increased travel and approval of this budget will ease the problem considerably.

#### RECOMMENDATIONS FOR IMPROVING THE PROJECT IMPLEMENTATION

proposal has been presented to FAO/Panamá to add two additional staff to the project and to approve an extended project life. Consideration and approval of this proposal at the earliest opportunity would allow more effective medium and long range research planning and improve the project implementation.

Relocation of Dr. Gaskell to Chiriqui Province would greatly improve his training and research effectiveness in priority areas with minimal short-term loss of coordinating effectiveness.