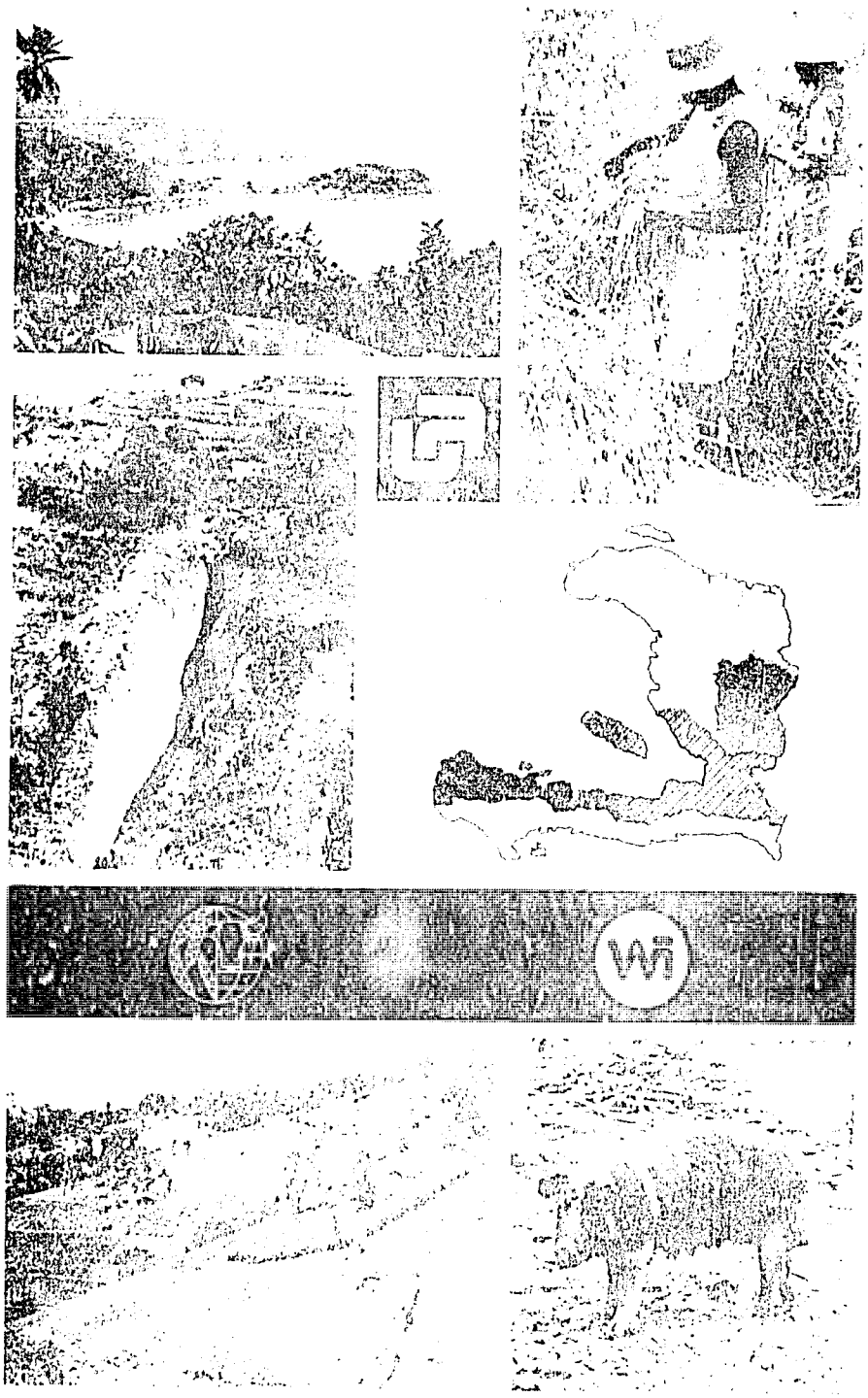
SUMMARY REPORT

Agricultural Development Support Project II
Haiti



SUMMARY REPORT

"Madame Sara" - local marketing system

AGRICULTURAL DEVELOPMENT SUPPORT PROJECT II

A cooperative project between

Government of Haiti

U.S. Agency for International Development (USAID)

University of Arkansas Fayetteville

Winrock International Institute for Agricultural Development

JANUARY 1988

This report was funded by USAID and prepared and published cooperatively by the University of Arkansas International Agricultural Programs and Winrock International Institute for Agricultural Development. Views and interpretations expressed are those of the publishers and not necessarily those of USAID.

Haitian farm with terraced fields on 45 degree slope. Eroded and denuded hills in the background.

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Fonds-des-Freres, Les Cayes watershed planting of napier grass on the contour. Finding enough vegetative material of this kind for direct planting proved a major constraint in project implementation.

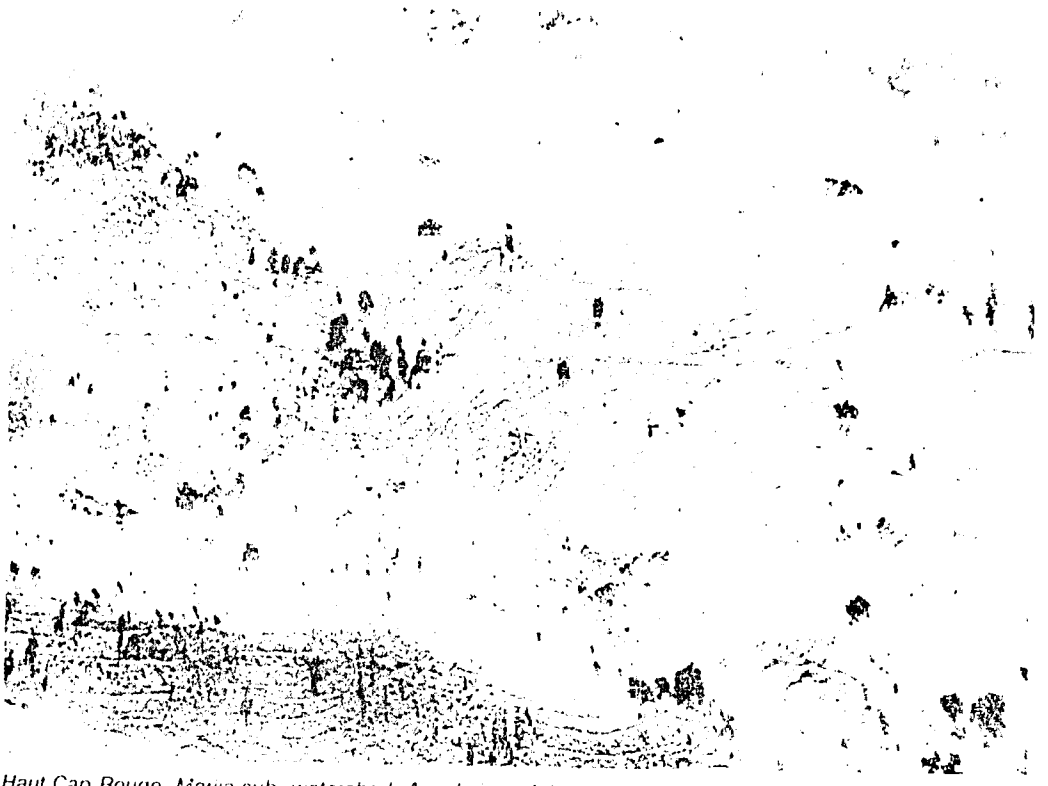
INTRODUCTION

The Republic of Haiti is the most densely populated country in the Western Hemisphere and is one of the most densely populated nations in the world. Despite its location in the tropics, portions of Haiti are semiarid and much of the country is characterized by serious deforestation and erosion. Agriculture is the primary industry employing at least 65% of the population. However, most farming is characterized by family subsistence plots of one-and-a-half hectares or less. Coffee is the country's main cash crop providing some income for almost 1.5 million farmers but only 25% of the total export income for the country. Light manufactured products, cocoa, mangoes, and essential oils make up the other 75% of Haiti's export income. Raw or partially finished materials constitute the largest segment of Haitian export-oriented economy represented by electronics, garment assembly and sporting goods firms. Imports include machinery, food-stuffs, petroleum, and cotton textiles.

The Haitian people are of African, European or Levantine descent. Most Haitians claim Roman Catholic or Protestant affiliation. Voodou, as an ethnic religion in its own right, can claim an important segment of the population. French is the official state language of Haiti while French Creole is the language of the people.

In 1984 the Agricultural Development Support II Project was initiated in Haiti as a unique program supported by USAID and the Haitian Ministry of Agriculture in which micro- and macro-economic issues affecting improvement of the Haitian agricultural sector, particularly small farmer systems, were addressed. Two complementary components were initiated: one orientated to inter-disciplinary, small-farmer on-farm Farming Systems Applied Research, the other to more macro national planning through establishment of a recurrent national level agricultural statistics program and a related spatially referenced national data base using geographic information systems technology.

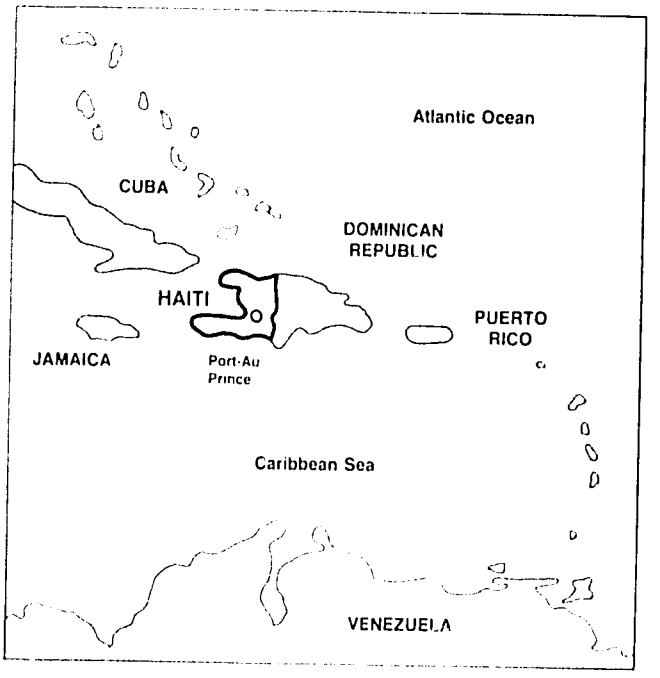
Applied research and extension results of field implementation of the Farming Systems Research component of the program were limited primarily to the Les Cayes and Jacmel regions. One advantage of the FSR approach used was the lack of any clear distinction between the generation of technology (research) and its diffusion (extension).

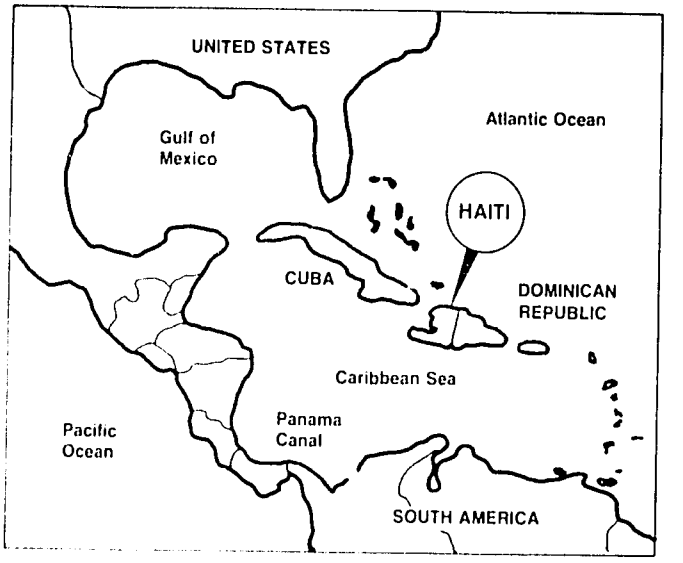


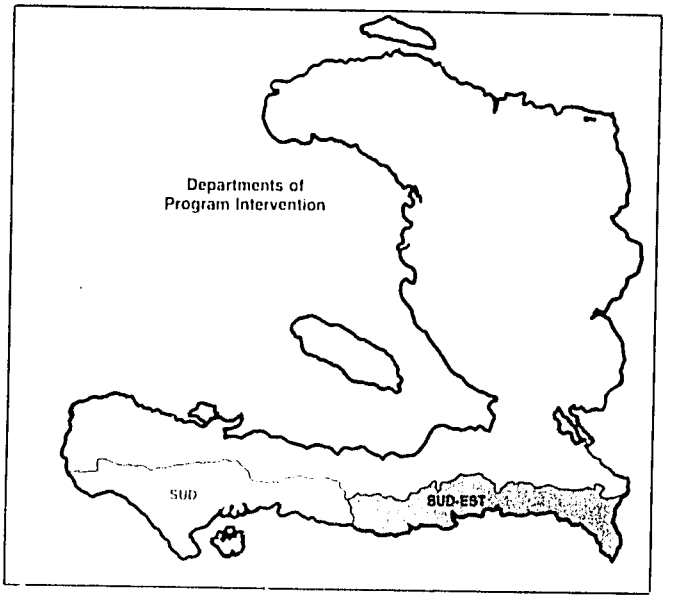
Haut Cap Rouge, Morija sub. watershed: Aerial view of the rock terraces, September 1987.

The National Agricultural Statistics component of the program began work with agricultural information gathering and analysis done to support the farming systems activities which served as a basis for the design of a national level information gathering and analysis system. While national information requirements could initially be identified by Haitian leaders, the means of acquiring such information could not be designed in Port-au Prince and implemented top-down. The national information system evolved based on the experience of the Farming Systems activities to identify the kinds of questions which would result in reliable data about agricultural production systems, given the nature of the open segment, area frame survey methodology employed.

Finally, to maximize the usefulness of data acquired by the national agricultural statistics and farming systems components of the project, a national Geographic Information Systems database was created which linked these new data sets to already existing national level data sets in Haiti, giving their spatial and geographic coordinates through cartographic and statistical outputs.







Computer-generated map of the Departments of Sud and Sud-Est, the intervention sites of ADS-II.

FARMING SYSTEMS APPLIED RESEARCH

On-farm applied research was conducted in two regions of the Southern Haiti penninsula: Les Cayes and Jacmel. Beginning in early 1984, reconnaissance, qualitative-type surveys were combined with site-specific focused objective quantitative surveys to identify the most important crop and livestock systems and production constraints, the intervention sites in which the project could best operate, and appropriate research strategies. Researcher-managed trials continued throughout the life of the project and represented the channel through which new ideas, activities, crops, etc., were first introduced to farmers' observations, environment, and socio-economic realities. Promising results from these trials quickly flowed into farmer-managed and demonstration trials which eventually led to either final acceptance or rejection of the innovation by the concerned farmers. The culmination of this work has been the identification of higher yielding varieties of maize, rice, sorghum and black beans; labor-saving techniques for harvesting and threshing rice; the development of effective soil conservation strategies; the reintroduction of pig raising; the development and promotion of rabbit raising; and orientation of national colleagues toward the use of farming systems applied research methodologies and philosophy to carry out research/development/extension. Throughout the life of the project, focused, limited scope, socio-economic surveys on subsamples of cooperating farmers were conducted to better understand farmer evaluations and specific costs and benefits of proposed innovations.

Les Cayes Fonds-des-Freres watershed system before soil construction work began.

Les Cayes Fonds-des-Freres watershed contour canals.

Subsistence farming with 30% of produce sold in market
Men most active in agriculture; women in commercialization of products
Fertilizers available in intensive plain and mountain zones

Fertilizer Costs: 20-10-20 $.24 kg
0-0-60 $.28 kg
11-53-00 $.40 kg
urea $.36 kg

Market Prices: Corn $.36 kg
Beans $.90 kg
Yams $.38 kg

Agricultural Seasons:
Primary: February-July
Secondary: August-January

Formal agricultural credit extremely limited (18%-20%), informal credit costs 200%-350%/year

Farming systems applied research, while accompanied with various methodologies, is even more importantly seen as a philosophy of development in which farmers themselves must be involved as direct partners/colleagues in evaluation of supposed innovations coming from the research station or elsewhere. It has been the attempt to transfer this orientation to national colleagues toward research/development/extension which has been an overriding objective of the FSR program.

A synopsis of socioeconomic data and FSR activities by work site is presented below:

LES CAYES: Mountain and Plain

Plain: 30-100 meters - Berault
Mountain: 100-350 meters - Fonds-des-Freres/Maniche

Temperature: Daily minimum 24.4 C
Daily maximum 37 C

Precipitation: Bimodal
Plain: 1985 mm
Mountain: 1200 mm
20,000 hectares potential for irrigation on plains
Evapotranspiration: 98-118 mm during Dec.-March; higher than rainfall received

Soils:
Mountain: Eroded slopes at 30-45 degrees
Low fertility
Plain: Soils considered fairly fertile, ph = 8
Good conductivity

Mean Farm Size:
Mountain: 1.53 hectare
Plain: 1.49 hectare

Land Tenure:
Mountain: 52% directly owned/exploited by owner
30% share-cropped
7% rented
11% undivided family
Plain: 54% directly owned/exploited by owner
26% share-cropped
5% rented
13% undivided family

JACMEL: Mountain and Plain

Plain: 20-100 meters - Bas Cap Rouge
Mountain: 100-600 meters - Haut Cap Rouge

Temperature: Daily minimum 24.4 C
Daily maximum 37 C

Precipitation: Bimodal
Plain: 1200 mm
Mountain: 2200 mm
Irregularity of rainfall in Jacmel plain is a major constraint
Limited irrigation on plains

Soils:
Mountain: Excellent conductivity, ph = 8
Generally high fertility
Red and gray soil more fertile than black
30-45 degree slopes
Plain: Good conductivity, ph = 8
Low potassium and phosphorus
Soils considered fairly fertile

Mean Farm Size:
Plain: 2.01 hectare
Mountain: 1.39 hectare

Land Tenure:
Mountain: 59% directly owned/exploited by owner
5% share-cropped
13% rented
23% undivided family
Plain: 56% directly owned/exploited by owner
24% share-cropped
15% rented
5% undivided family

FARMING SYSTEMS IN LES CAYES

A priority in the Les Cayes plains was irrigated and non-irrigated rice research. Wet-land rice production increased with the identification and extension of several improved varieties, including Amina (IR-5931-113-1). The introduction of the hand scythe and single-user rice thresher proved pivotal with decreased labor costs and increased captured grain for consumption or marketing. These three improvements combined with the seed distribution program in Bruny are viewed as significant technological introductions by the program in this plain zone.

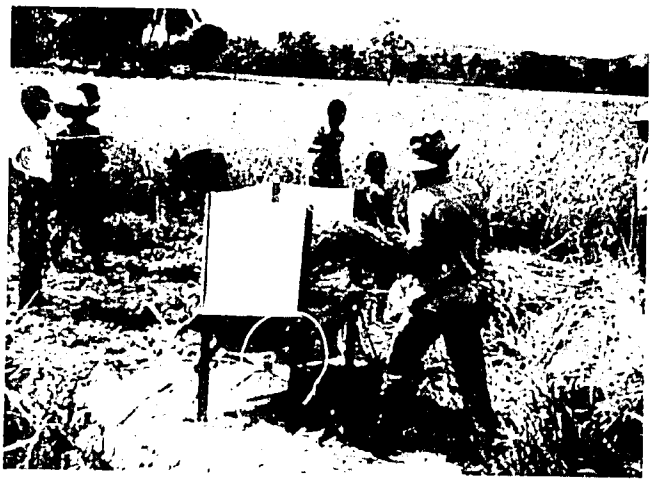
Beans are one of the most important legumes cultivated in Les Cayes and are an important source of protein in the diet of farm families. Red or black beans are grown in monoculture or in association with many other crops, but most frequently with corn, sorghum, bitter manioc, sweet potatoes, or yams. Introduction of the black bean variety Tamazulapa into the cropping system resulted in significantly improved yields, greater tolerance to moisture stress and mosaic virus, improved food quality, and increased surplus for marketing when compared to traditional varieties.

A major focus in the soil conservation effort was to identify farmer sustainable methods of continued soil conservation work. Different systems were experimented with in Les Cayes and Jacmel, with a functioning system finally adopted as most feasible. This included exclusive farmer creation of contours and plantings using household or invited labor, with the assistance of a trained farmer monitor. Project technicians believe it essential that there be outside support in providing the initial vegetative materials at no cost to the farmer, combined with a small financial contribution based upon the number of linear meters of properly completed vegetative strips/canals or rock terraces constructed by the farmer. This incentive program proved far more successful than food-for-work, salary-based work forces or no-financial-contribution approaches tried elsewhere in Haiti. Farmers believe that their efforts in this regard are of benefit to more than just themselves, and given their own financial labor constraints it is right that there be some form of assistance.

A living terrace was the soil conservation measure most commonly employed in Les Cayes. These terraces were constructed by digging shallow contour canals every five feet perpendicular to the prevailing slope and then reinforcing them by planting vegetative materials, usually napier grass, with regular spacings of different varieties of tree seedlings (usually bois blanc and bois pele). Those seedlings came from a nursery established by cooperating farmers in a nearby site.

As part of the socio-economic program, a geographic information system (GIS) was used in identification of major rice growing areas and major agro-ecological zones in the project area. A socio-economic database of the cooperating farmers of the Bruny program was created on Lotus 1-2-3 for future yield analysis and monitoring of the spread of program-introduced rice varieties.

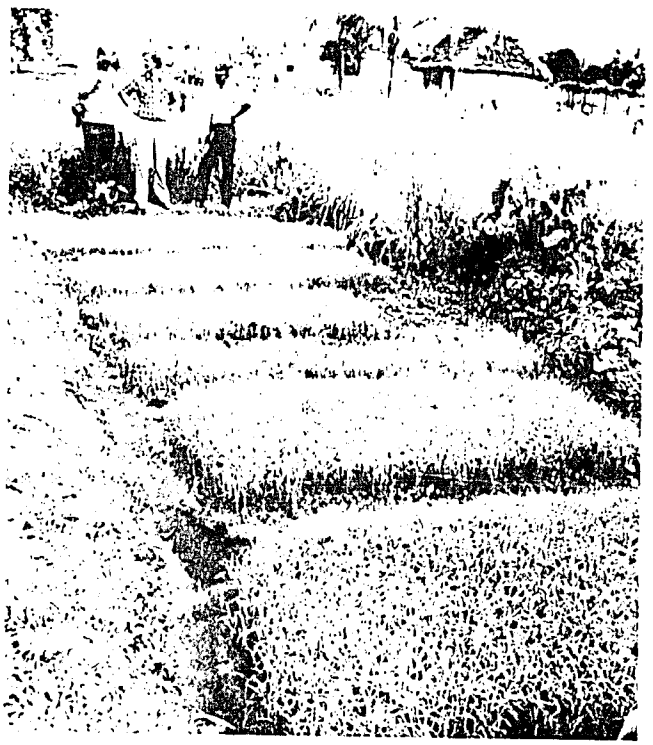
Philippine IRRI-introduced rice variety by Dr. Amal Chatterjee in Les Cayes



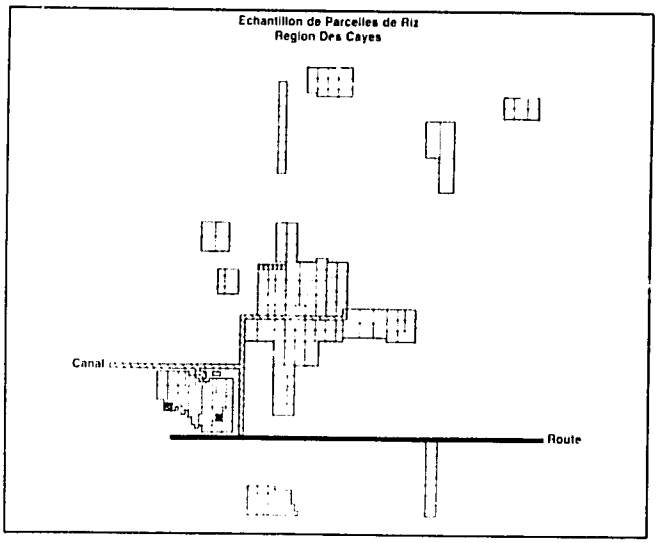
Farmers in Les Cayes fields using introduced rice-threshing technology and harvesting scythe.

Small animal production systems were also given high priority in the FSR work in Les Cayes. Swine repopulation activities and household rabbit production met with varying degrees of success. Following the national swine eradication program of the early 80's to remove african swine fever from the island, initial efforts were made to completely change peasant farmers' management methods and his pigs—which have always been the most important financial resource of Haitian peasants. FSR studies quickly indicated that overreliance on purchased feeds and construction of cement-floored pens were beyond the means of most farmers. More appropriate systems were suggested and worked out among cooperating farmers.

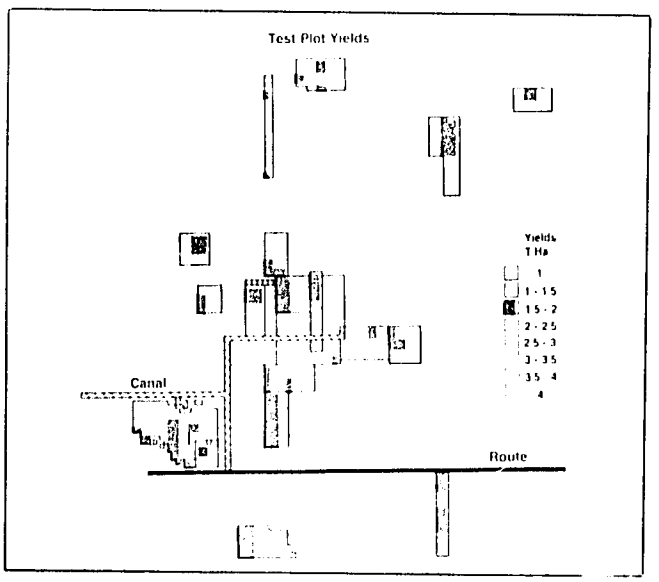
An important part of the ADS-II work in Les Cayes was the farmer-to-farmer extension activities that took place at the instigation of the agronomists/researchers. This contact encouraged farmers to adopt new methods, new seed varieties, and new animal husbandry techniques resulting in optimal sustainability of introduced improvements.



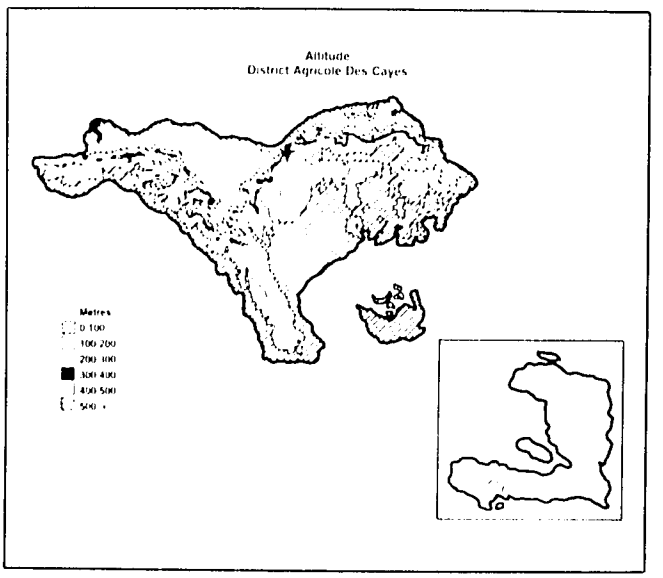
Rice trials in Les Cayes.



GIS computer work showing parcels of rice in Les Cayes areas.



GIS map examples of test plot yields in Les Cayes with computer-generated maps of individual rice plots by yield.



GIS example of altitude variations in Les Cayes watershed.

FARMING SYSTEMS RESEARCH IN JACMEL

The applied research program in Jacmel was similar to that developed in Les Cayes except for some change in focus of priority crops. Greater success was realized in identifying and partially extenting an introduced black bean variety, Tamazulapa, as well as two varieties of cowpeas. Cabbage and Irish potato research programs were very successful, with cabbage cultivation, increasing from nothing in 1984 to some four out of every ten farmers growing it on the Cap Rouge plateau for both household consumption and domestic markets. Successful cabbage varieties were KK-Cross and TropiKross. An entire market system has developed around the cabbage creating links with the plateau community and markets as far away as Port-au-Prince. Success with cabbage production and marketing stimulated opportunities for production and marketing of other vegetable crops —Irish potatoes, tomatoes, and eggplant.

Swine research, because of the singular importance of this animal in the household economy, was given considerable attention. Research concentrated on identifying animal feed mixtures within the means of small farm budgets which would maximize the genetic production potential of the introduced pigs (a three-way cross between Hampshire, Yorkshire, and Duroc).

Program activities in Jacmel assisted the farmers on the Cap Rouge plains in the improvement of their irrigation systems and in the development of adequate drinking water supplies through construction of cisterns. The cisterns reduced the tremendous labor time required for the women and children to transport water over miles of steep mountain trails.

Special studies were conducted in the Morija sub-watershed on the Cap Rouge plateau using a GIS in which all relevant socio-economic, household level and agronomic data concerning this watershed were studied. Individual fields/plot boundaries were digitized in a 1 meter x 1 meter data base and associated with Lotus spreadsheet data concerning land tenure, field ownership patterns and crop monoculture, and associations for changing agricultural seasons. This resulted in a powerful analytical tool for objective historical and spatially referenced records of the physical inter-relationships of the farming systems of the region for future monitoring and evaluation of change.

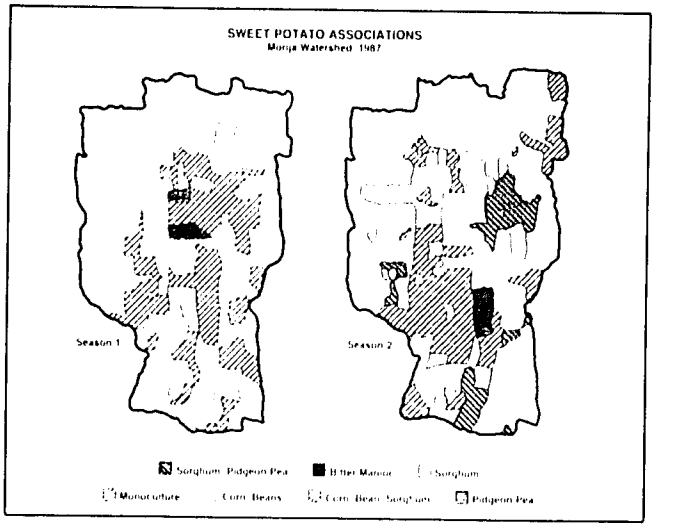
Jacmel project sites, like Les Cayes, realized some important changes as a result of the technical interventions of the ADS-II project. Perhaps the most important change was the sustainability of the soil conservation measures implemented, the improved nutrition for numerous farm households, and improved agricultural techniques. As in Les Cayes, the

Morja Watershed, Jacmel: First agricultural season (May '87). Some 3-4 weeks follow planting of corn and beans. Rock terraces constructed through project interventions include thousands of tree seedlings and napier grass which are not yet evident in this completely deforested mountainous area. Photo taken at 3000 meters, May 1987

Bas Cap Rouge, Jacmel: Common cropping system on plain includes an association of corn, beans, plantain, and pigeon peas.

most sustainable component of the work accomplished was the farmer-to-farmer extension activities that took place at the instigation of the ADS-II team, agronomists, and farmer monitors. Trained Haitian technicians continue the applied research process. Many of the benefits of these programs are yet to be realized.

The soil conservation program on the Cap Rouge plateau was particularly successful. Major portions of several watersheds were protected using a combination of rock terraces, vegetative strips, and fruit trees. Tree seedlings preferred by farmers included Haitian oak, mahogany, bois blanc, bois pele, avocado and coffee seedlings. Beginning in 1984 with virtually no protected slopes, the region has been physically altered as a result of the conservation measures undertaken. Once started, much work was performed by farmers with no compensation—they could see the visible results of improvements on project-cooperating farmer fields and many farmers could not "wait" until the program could work with them. Availability of vegetative materials was a major constraint. It was in Jacmel that a feasible farmer/researcher collaborative program of soil conservation was developed and extended to the program in Les Cayes. After considerable conscious-raising efforts by program technicians, the farmers took the initiative to seek assistance to protect their lands. It became evident in both Jacmel and Les Cayes, later supported by national agricultural statistics data, that mountain farmers own more of their land than they rented or share-cropped—a situation which is somewhat different on the plains. Farmers are pragmatic and know that through continuous cultivation of slopes, they are losing soils upon which their very existence depends. They are seeking viable and economically sound means of sustainability and will adopt improved soil conservation technologies if some assistance is provided.

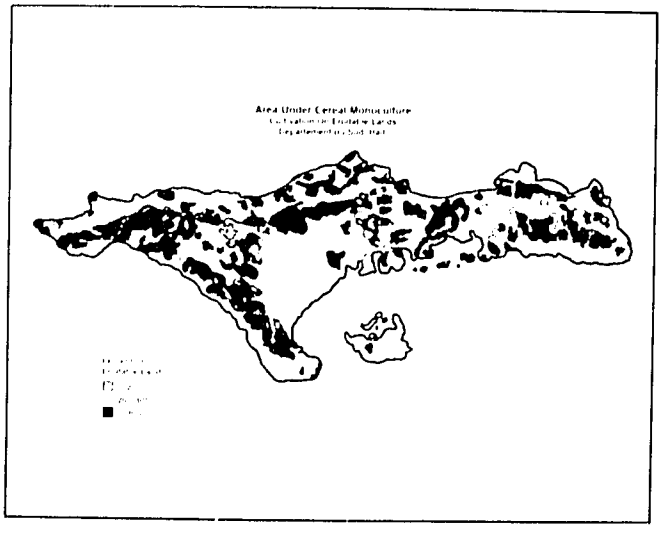


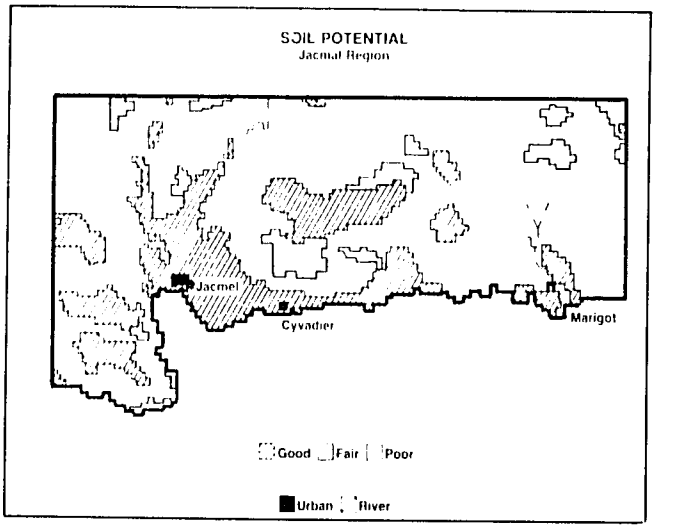
GIS computer outputs:

Strata showing crop cover second season for Morija watershed, 1987, Jacmel;

sweet potato associations first and second seasons, 1987;

soil potential in Jacmel region with the towns of Jacmel, Cyvadier and Marigot indicated.



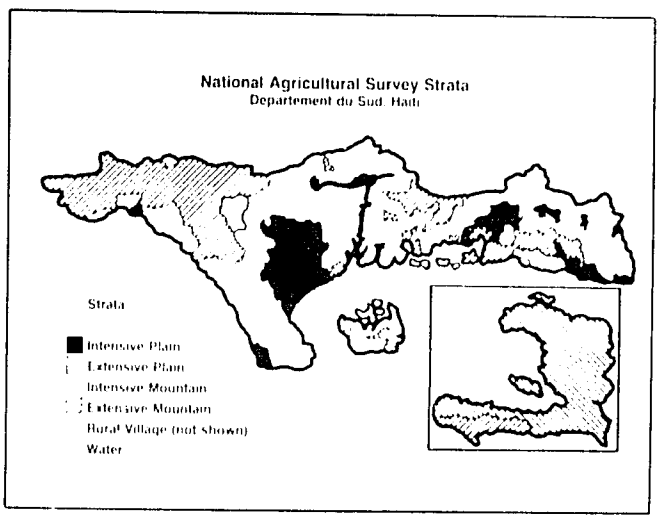


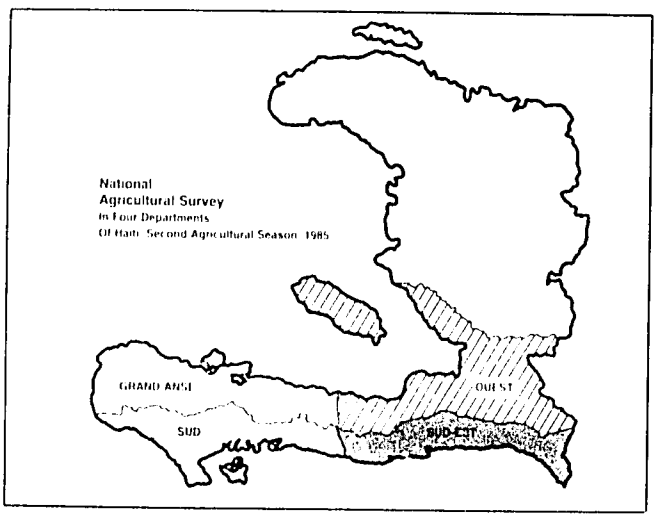
NATIONAL RECURRENT AGRICULTURAL SURVEY

The recurrent National Agricultural Survey (NAS) component of the ADS-II Project was effectively launched in April, 1985. The initial NAS mandate was to strengthen the Agricultural Ministry's operational/administrative capacity to conduct and coordinate a national program of agricultural information collection, analysis and dissemination. Initially, agricultural information systems were developed in FSR areas of intervention. Based on these initial efforts, the NAS proceeded to a national information system implementation phase.

The data entry programs for the first survey were written in K-MAN applications language. Beginning with the second survey and continuing to the Project's conclusion, dBASE III Plus was exclusively utilized. dBASE III had the advantage of speedy data entry, limited logic checks with data entry, and straightforward data conversion to LOTUS data structure. Macros, written in LOTUS, were then used for data analysis and report generation. LOTUS was additionally employed for spreadsheet data visability and graphic illustration of survey results.

Bas cap Rouge, Jacmel Cyvadier Project Zone.

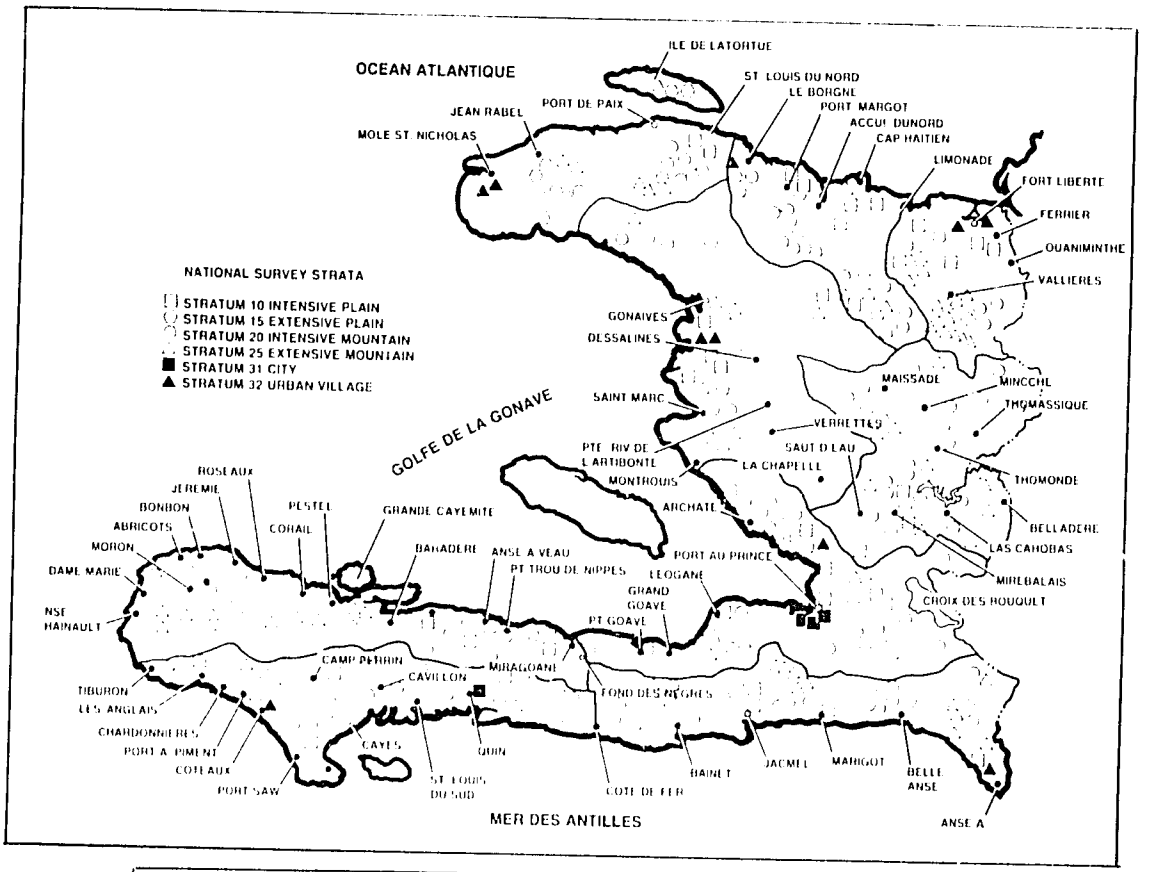


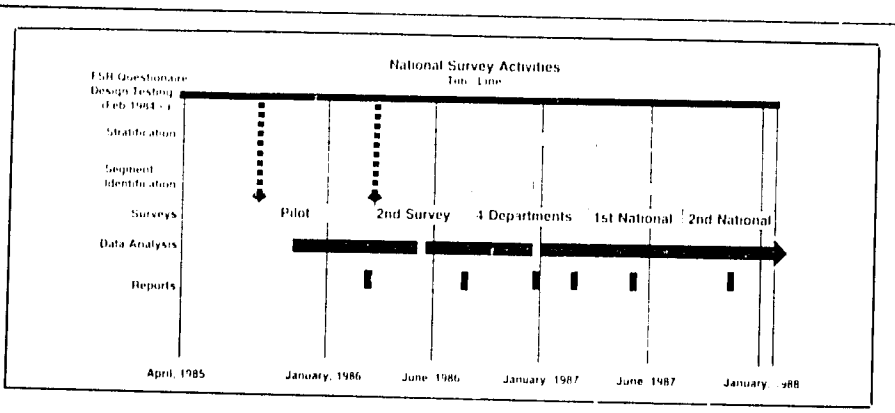


By the conclusion of the ADS-II Project the NAS component realized numerous accomplishments:

- the laborious tasks of national area frame stratification, sample allocation and selection, and segment identification were completed;
- field work for two complete national and three departmental level preliminary surveys were completed;
- reports on the preliminary and first national-level surveys were published;
- analyses of all surveys including the first national-level survey were completed;
- supervisory and enumerator corps of 40 and 280 persons respectively were established and trained;
- a data entry corps consisting of 10 data entry personnel and a programmer/director was created;
- a three-member statistician/analysis team was trained together with the data analysis corps using the appropriate hardware and software – capable of inputing, processing, and reporting all data generated by the recurrent surveys.

For the first time ever, agricultural information based on a reliable national probability sample is now available to Haitian decision makers.





GEOGRAPHIC INFORMATION SYSTEM/REMOTE SENSING UNIT

In December, 1985, the first activities to create the Geographic Information System/Remote Sensing (GIS/RS) began. The mandate of the Geographic Information System Unit of the ADS-II Project was to utilize relevant existing data to establish and maintain a dynamic and reliable agricultural data base for the Republic of Haiti. The Comprehensive Resource Inventory and Evaluation System (CRIES) of Michigan State University was selected as the software most capable of this task. Ten selected staff and technical assistance advisors were trained at Michigan State University in the use of the CRIES software. The CRIES Project permitted the GIS/RS Unit to digitize and create an initial data base containing nine layers of information. By April 1987, a digitizer and micro-computer were installed at the Ministry of Agriculture. Work then continued on a nationwide data base. Between April and September, 1987, the Sections Communales data base was used to produce eight separate maps that were modified by Haitian decision makers, who in September of that year established the present configuration of 22 Districts Agricoles based on aggregations of Sections Communales. The map of these administrative divisions is now a part of the base for future statistical reports.

The digitized mapping capability has been used to map Haiti's road system, the District Agricole boundaries, malaria treatment zones, major mineral resources, and to reflect population density. Sub-sub-watersheds of fourth-order streams have been completed for the entire country. This data has been the base for a separate statistical atlas for the country's 31 primary watersheds. By November of 1987 work was initiated to map all of the soil conservation and reforestation projects in Haiti. The national geographical information system data base currently consists of files of 100 and 300 meters resolution with eighteen low resolution and three high resolution files. Each of the high resolution data sets contains 27 sub-files. Each of these sub-files corresponds to the 1:100,000 topographic map sheet of the same number.

Apart from the national data base, the GIS/RS unit created a number of special purpose, local data bases. These include:

- data base near Les Cayes and Jacmel for the localization of malaria focii in association with the National Malaria Eradication Service
- data base of the Les Cayes Agricultural Districts
- two sub-watersheds in the Artibonite watershed for the Department of Natural Resources
- two project regions in northern Haiti for U.S. Agency for International Development
- two sections rurales for professors in the Faculty of Agriculture and Veterinary Medicine
- the Haute Cap Rouge watershed for the Jacmel Farming Systems Research Project
- a rice plot ownership data base for the rice crop trials research in the Les Cayes area
- a data base of the Departement du Sud in support of the National Agricultural Survey
- a data base of all sampling segments for the National Agricultural Survey
- a data base of the National Agricultural Survey Stratification of the country.

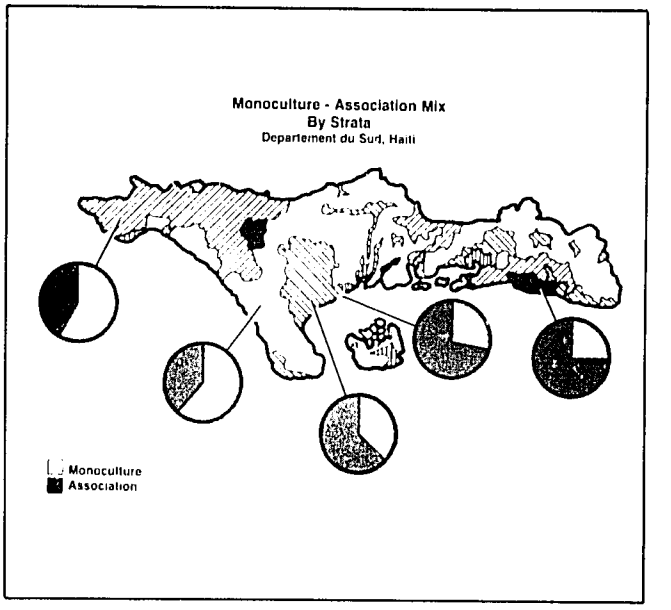
The research function of the GIS resource unit is critical. GIS represents an entirely new tool for managers of natural resources in developing countries. More research is required to better integrate this tool into the normal decision-making process. One of the major advantages expected from the widespread use of the GIS/RS unit is to increase the access of decision makers in all of the Ministry departments to information collected and stored by all other departments. The GIS/RS resource unit will provide a central clearing house for access to all of the satellite GIS data bases. The unit can not only assist decision makers to find existing information collected and stored by GIS satellite systems, but also to establish formal information channels to those data bases. As new data are available, the system can be updated and enlarged, thus making available to Haitian decision makers reliable national information.

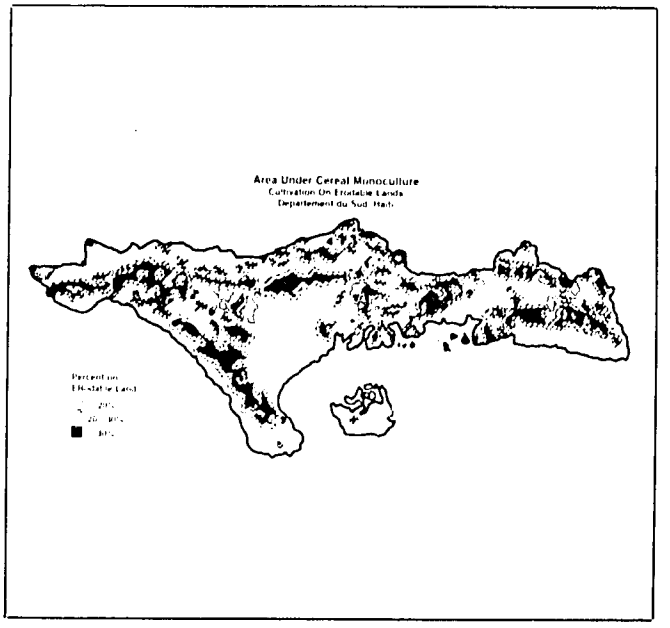
300 Low Resolution Files of Haiti

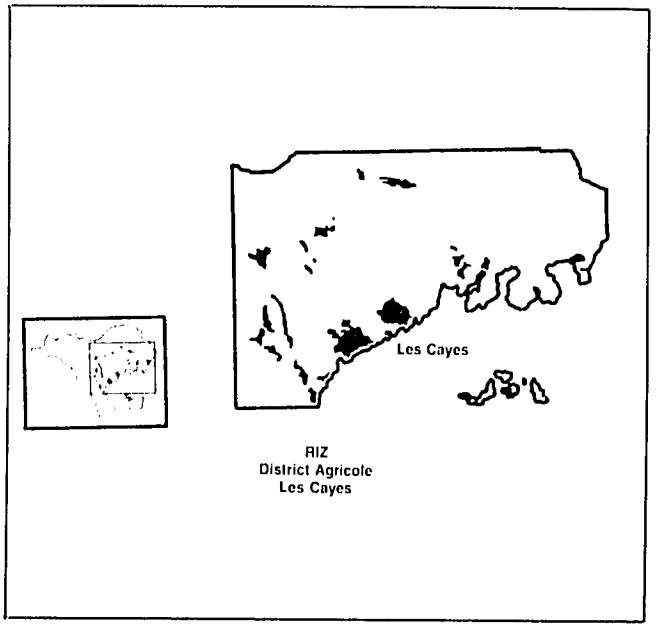
Sections Communales
Fontieres Politiques de Commune d'Haiti
Fontieres Politiques d'Arrondissement d'Haiti
Limites des Departements d'Haiti
Pluviometrie d'Haiti
Classification Ecologique de Holdridge
Occupation de l'Espace
Repartition de l'Habitat
Districts Agricoles d'Haiti
Potentialite des Sols
Stations Climatologiques
Bassin Versants Principaux
Bassin Versants Secondaires
Sous-sous Bassins Versants
Population par Section Communale
Routes
Les Mines d'Haiti
Hydrologie

100 High Resolution Files of Haiti

Elevations d'Haiti
Limite des Communes
Hydrologie







THE HUMAN RESOURCE

Training was an integral part of the ADS-II Project. It is estimated that approximately 860 and 750 farmers respectively in Les Cayes and Jacmel benefited directly from in-country training. Approximately 67 farmer/research monitors were trained in Jacmel and Les Cayes in soil conservation/agro-forestry methods and other activities. Haitian agronomists were trained to collect and process raw data, then to analyze and interpret the data using hand-held calculators or micro-computers utilizing MSTAT statistical software.

In order to establish and extend FSR methodology to other parts of Haiti, the Project initiated a vigorous training program for many young Haitian technicians. The technicians, in turn, as they applied their newly acquired skills, were assigned by the Ministry of Agriculture to other regions of the country—thus disseminating applied research results outside the target areas during and after the project.

It was the policy of the Project to hire farmer monitors from the zones where they lived. This proved optimal as these farmers knew everyone in their communities and could easily enlist other farmers to collaborate with the Project. This policy required little travel and permitted the program to have monitors on site permanently. The farmer monitors learned to establish a field trial, monitor it, and collect harvest data independent of the agronomist. Farmer monitors were then trained in plot harvest, sample weighing and testing for moisture content using digital electronic moisture meters. Much of the credit for the success of the ADS-II Project was a result of these farmer monitors.

An important part of the training for farmers was their participation in Project activities where they learned by observation and practice. The Project organized many formal field days timed to specific periods of the agricultural cycle to give farmers from different localities the opportunity to interact with cooperating farmers of the Project. This extension process became an invaluable tool whereby new seed varieties and improved soil conservation methods spread from farmer to farmer far beyond the Project's original scope.

The Project trained student interns from the Faculty of Agronomy about on-farm experimentation and data collection. Frequently, these students realized their first hands-on experience with farmers during their Project internship. The Project accepted twelve end-of-fourth year interns for six months service; later the six months service was revised to one year assignments.

Farmers involved in planting a bean trial in Beraulf, Les Cayes. Two rows are planted on either side of each mound near top. Corn will be planted in furrows.

With the GIS/RS and NAS Components to ADS-II Project, intensive methodology workshops were conducted in-country at regional, departmental, and assistant levels. Ten selected staff and technical assistance advisors were trained at Michigan State University in the Comprehensive Resource Inventory and Evaluation System to effectively perform their basic function. This original training was enhanced through unabated formal and informal training of the NAS and GIS/RS staff in an effort to increase the technical skills, minimize the effects of staff turnover, and improve intra-unit cooperation. For these two components of the Project, the focus of training shifted in the summer of 1987 to training people outside NAS and GIS/RS units so that the analytic capacities of the units could be extended to other parts of the Ministry. In order to develop a basis for cooperation between all departments and units, a formal workshop series focused on training of staff operating the independent GIS/RS and NAS units in other Ministry departments.

Three long-term trainees were sent to the U.S. to complete advanced degree training. These trainees had proven commitment to excellence and field work. Two trainees have pursued graduate degrees at the University of Arkansas, Fayetteville, with the third trainee working on a graduate degree at Tuskegee Institute in Alabama.

In the final analysis it is the people of Haiti—the human resource—that will sustain and continue the advancements realized during the life of the Project.

Haut Cap Rouge, Jacmel. Project field visits and field days on farmer fields were important learning sessions. Pictured are maize and bean trials.

INSTITUTIONAL LINKAGES AND DEVELOPMENT INTO THE FUTURE

The Ministry of Agriculture, Natural Resources, and Rural Development (MARNDR) of the Government of Haiti, the U.S. Agency for International Development, the University of Arkansas and Winrock International began cooperative endeavors with the initiation of the ADS-II Project. Initially ADS-II was administered through the College of Agriculture and Veterinary Medicine (Faculty d'Agriculture et Medicine Veterinaire, FAMV) of the University of Haiti. Because of this, a close association developed between the University of Arkansas, Winrock, and the FAMV. In September 1984, however, the project was physically relocated and organizationally moved into the Ministry of Agriculture, Rural Development, and Natural Resources.

In 1985 the administration of the FAMV expressed an interest in engaging the University of Arkansas in a process of evaluation of the program and resources of the FAMV. This evaluation process was intended to lead to closer linkages between the FAMV, the University of Arkansas and Winrock with subsequent institutionalization of these linkages. The linkages initially discussed with the FAMV included reciprocal exchanges of agricultural study publications, faculty lecture exchanges, and selected reciprocal departmental program reviews with recommendations.

By late summer of 1986 it was evident the strengths of the FAMV enabled it to engage in an extensive self-examination and analysis. An ambitious new program was put in place, major changes in perspective were adopted, and changes emerged from the lessons learned from local experience. Demand for the services of the FAMV by MARNDR, USAID, other public agencies, and the private sector has grown during the life of the project. The FAMV has put together an excellent, relatively young faculty with a high level of training from a wide variety of institutions in Haiti, Canada, Europe, Latin America, and the U.S. The availability of the training and internships programs from the farming systems component of ADS-II, coupled with access to the recurrent National Agricultural Survey data provide the faculty and students of the FAMV with constantly evolving opportunities for research, planning, and training.

Farmers cooperatively building rock-vegetative terraces

By September 1987 the Haitian Minister of Agriculture officially placed the ADS-II Project in the Unite de Programmation, Suivi et Evaluation of the Ministry. The project sub-components of the Geographic Information Survey and National Agricultural Survey thus began the process to become truly integrated units of the MARNDR planning system—a planning system which must continue to evolve into the future.

The changing situation in Haiti, and Haiti's almost total dependence upon agriculture for its economic base, makes the role of each Haitian institution actively working with sister institutions toward positive agricultural planning, cooperation, and policy development, absolutely crucial to the future of Haiti. The future of Haiti lies with her small farmers and her institutions. Linkage and planning activities initiated during ADS-II must continue to become institutionalized if the full benefit of the Project is to be realized.

Haut Cap Rouge—two project agricultural technicians monitoring development of a cabbage trial. Corn ready for harvest is in the background

Project-tested direct seeding of different vegetative materials from grasses to tree species. Here the son of the field owner prepares the seed bed below rock terraces into which sesbania sesban *was sowed. Sweet potatoes represent the vegetative material visible.*

HAITIAN VITAL STATISTICS

HAITI: LAND TENURE BY PERCENT OF AREA (Hectares), 1987

DEPARTMENTS	Area (ha.) Cultivated	Land Owned Directly	Sharecropped	Rented	State Land	Untitled Land	Undivided Inheritance	Other
SUD	120,000	67%	13%	5%	1%	0%	10%	0%
GRAND-ANSE	133,000	66%	8%	9%	6%	2%	9%	1%
SUD-EST	32,000	68%	9%	5%	6%	2%	9%	0%
L'OUEST	57,000	61%	9%	10%	2%	1%	17%	0%
CENTRE	129,000	70%	12%	6%	3%	2%	6%	0%
ARTIBONITE	184,000	72%	3%	9%	8%	3%	5%	0%
NORD-EST	41,000	47%	16%	7%	11%	8%	10%	1%
NORD	87,000	68%	6%	7%	4%	0%	13%	2%
NORD-OUEST	68,000	69%	5%	1%	6%	1%	18%	1%
TOTAL	851,006	67%	8%	7%	5%	2%	10%	1%

HAITI: AREA ESTIMATES (Hectares) FOR SELECTED CROPS, 1987

DEPARTMENTS	Crops					
	Corn	Sorghum	Rice	Black Beans	Bitter Manioc	Sw. Potatoes
SUD[1]	75,200	63,100	13,000	14,000	11,000	30,900
GRAND-ANSE	92,700	36,800	6,800	29,800	19,600	32,200
SUD-EST	28,400	10,100	100	6,800	2,700	5,800
L'OUEST	25,000	22,400	9,800	1,000	8,600	13,800
CENTRE[2]	74,100	32,200	3,000	14,200	13,300	16,500
ARTIBONITE	71,200	58,800	41,900	700	4,600	700
NORD-EST	19,300	300	7,900	200	12,200	2,400
NORD	36,400	11,600	4,200	700	11,100	11,100
NORD-OUEST	25,700	2,300	*	500	4,800	8,700
TOTAL	448,000	237,600	86,700	67,900	87,900	122,100

[1]First four departments include data from a full year: second agricultural season 1986 and first agricultural season 1987

[2]Last five departments include data for only the first agricultural season 1987. Total given therefore lack second agricultural season 1986 data for 5 departments

* less than 50 hectares

HAITI: ESTIMATES OF ANIMAL POPULATIONS BY DEPARTMENT, 1987

DEPARTMENTS	Cattle	%	Goats	%	Sheep	%	Pigs	%	Donkeys	%	Mules	%	Horses	%	Chickens	%
SUD	177,000	54	311,000	61	125,000	26	63,000	13	45,000	26	30,000	18	30,000	15	812,000	72
GRAND-ANSE	213,000	58	443,000	72	65,000	18	29,000	5	33,000	20	22,000	14	26,000	16	901,000	76
SUD-EST	78,000	44	216,000	62	4,000	1	4,000	2	19,000	26	14,000	19	15,000	20	435,000	74
L'OUEST	115,000	46	232,000	55	12,000	3	46,000	8	43,000	28	13,000	10	16,000	13	598,000	69
CENTRE	61,000	28	181,000	57	2,000	1	16,000	6	10,000	11	10,000	10	27,000	25	593,000	76
ARTIBONITE	174,000	34	630,000	56	71,000	6	156,000	20	82,000	30	41,000	17	55,000	20	973,000	52
NORD-EST	59,000	45	67,000	41	6,000	3	13,000	8	10,000	18	3,000	6	24,000	31	330,000	73
NORD	65,000	32	143,000	37	10,000	1	4,000	1	13,000	12	2,000	2	7,000	6	375,000	51
NORD-OUEST	73,000	33	410,000	77	145,000	37	16,000	3	66,000	45	24,000	22	27,000	24	865,000	81
TOTAL	1,015,000	42	2,633,000	58	440,000	11	347,000	7	321,000	24	159,000	13	227,000	19	5,882,000	69

[1]Percentages of agricultural households with at least one such animal or fowl. ADS-II report #56 gives greater detail on other fowl, breaks out cattle by age groupings, and also indicates major causes for animal loss and percentages of each type of animal which is kept in a share owner relationship

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