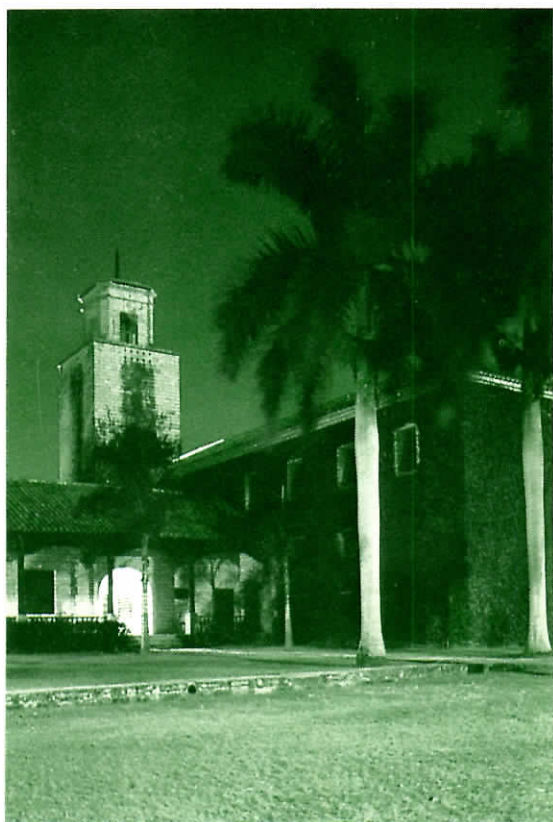




# **ZAMORANO**

**ESCUELA AGRICOLA PANAMERICANA**



**annual report 1984**

# **Escuela Agrícola Panamericana**

**Tegucigalpa, Honduras**

**Annual Report 1984**



## DIRECTOR'S MESSAGE

ZAMORANO: OFTEN IMITATED. NEVER DUPLICATED.

It is with great pleasure that we invite our friends and supporters of the hemisphere to read our annual report for 1984. This year has been, in many ways, one of the best in recent times. We graduated 98 students (including 6 girls) from 11 countries in the tropical region. We have made great strides in practically every new program initiated and have consolidated and augmented many educational projects. With the freedom of operation and the absence of government restrictions that characterize a private international institution, Escuela Agrícola Panamericana is constantly probing new areas and experimenting with new ways of conducting the operations and educational programs of the institution. Excellence in education is the product of constantly refining proven methods of implementing traditional programs. Good programs are the consequence of adapting to the constantly changing conditions of the world and thereby improving them as one progresses.

Freedom to innovate is perhaps the single most important characteristic that sets us apart from our sister institutions in Latin America in agricultural education. Every successful advance is the result of unrestricted experimenting. We are very proud of our freedom to make mistakes because it has made us the world leader in agricultural "learning-by-doing" at the university level.

In the past 44 years practically every new college in Tropical America has sent a delegation to Zamorano to study, observe and attempt to imitate our successful programs. We have always welcomed these visitors since imitation is the sincerest form of flattery. We are happy to share our methods and our experience with anyone who can implement them and persevere. But, herein lies the problem. The majority of Latin American institutions are not set up like Escuela Agrícola Panamericana. First, they do not have an endowment to give them financial independence; and second, they generally lack a Board of Trustees with the dedication and quality of Zamorano's. Good Boards support the institution, donate their time and substance generously, provide guidance, leadership and are responsible for the continuity so indispensable in achieving excellence in teaching and research.

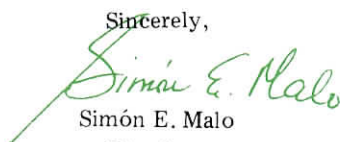
Most "Task Forces" visiting Zamorano, and intending to imitate its organization generally expect to be given a cook-book set of rules and formulas to be followed and put into practice. However, they are usually dismayed to find out that there is no "magic formula" for success. Our system works because everyone, from the Director on down, gets up at 5:00 a. m., and with well-known Zamorano spirit, goes to work with enthusiasm and a touch of missionary zeal. Rain or shine, by 6:30 a. m., every student, instructor and professor is in the field. This discipline and dedication is difficult, if not im-

possible, for the majority of imitators to implement and achieve. Our work ethic and persistence emanates from years of success, from the awareness that we are the best in the region, and from knowing that we have to work harder every day to maintain our position of leadership.

Our discipline is that intangible cement that melds our whole system together and makes it work, and it is this discipline that no other college in Latin America has been able to implement to the degree that we practice it here at Zamorano.

Friends and new readers, we invite you to visit our school to learn and to freely copy our ways by exploring our farming and educational operations. You will find that we are hospitable, unselfish with our information and candid with our answers and opinions. We truly consider imitation the most sincere form of flattery.

Sincerely,



Simón E. Malo

Director



## CHAIRMAN'S REPORT

Another successful year ending with one of the largest graduating classes in the history of Escuela Agrícola Panamericana encourages me to attempt to describe the main strengths and achievements of the school as it enters its fifth decade of service to the agricultural community.

The philosophy which guides the institution, in spite of having been refined and updated by many years of careful usage, remains basically the same as was originally outlined by the founders. The school's main function is still to train young Latin Americans in agriculture with a disciplined on-campus life and a hands-on concept of learning by doing. There have been changes of form over the years. The school now accepts girls as well as boys with a high school diploma, and a fee is charged to cover a part of the cost of education, board and lodging. There has also been a notable and continuous improvement in the standard of education which the school provides.

The quality of the teaching staff contributes more than anything else to the academic level of our graduates. Many of the staff are graduates of the school and consequently have the spirit, dedication and sense of discipline deeply ingrained in their systems which guide the programs of the school. Over half of the staff hold graduate degrees and at least half of these are doctoral degrees from U.S universities. The director is continuously seeking first class professors to fill key teaching positions and the Board is justifiably proud of the excellent staff which identifies the school as a leading international educational center.

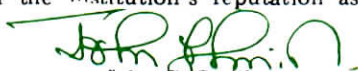
The school provides much more than a purely technical and scientific training. Character development is one of the main aims of the program and is provided by the disciplined campus life, the practical field instruction and the mix of students from different countries and social backgrounds. The admissions staff conducts entrance examinations and personal interviews of candidates in several centers in more than ten countries in an effort to select qualified students. Strong motivation and a desire to absorb the type of life which Zamorano offers are important selection criteria.

The architectural layout of the school was carefully conceived from the start, including the spaciousness of the campus, the planting and care of the grounds, the simplicity of design and the structural quality of the buildings which have all been maintained as the school has increased in size. Laboratories and technical equipment have been kept up to date. The school community living and working in this physical environment provides a rare and special quality of life apparent to all who experience it and often remarked on by our many and varied visitors.

The Board of Trustees is constantly concerned with the preservation of the many outstanding features of the school which make it such a unique institution, while at the same time keeping it up to date and maintaining its position as a leader in agricultural education in the area. One of the most notable recent innovations has been the increase in the annual matriculation fee which all students have to pay. The Board decided some years ago that rather than offer a free education, a sounder policy was to concentrate on providing the best education available and to charge what was necessary to maintain a high standard and to assure the School's financial security and independence. One result of this policy has been a marked increase in the number of scholarships and student loans provided by international funding agencies, governments, corporations and individuals who consider that a Zamorano education for needy students is a cause worthy of their support. During the year under review almost two thirds of the students received some form of financial assistance to help defray that part of the cost which all students have to pay. This is a remarkable achievement and the board acknowledges with gratitude this outstanding proof of the confidence of its many friends and supporters.

Again this year there was an increase in expenditure over last year, but this was covered by increased income from corporate, individual and other contributions mentioned above and from rising sales of farm produce. The latter reflects further improvement in the management of the production departments of the school farm and provides a good practical demonstration of farm economics to the student body. This also, with the assistance of the local government, provides Honduran farmers with a source of first class certified grain seed, and livestock for breeding purposes.

On behalf of the board of trustees, I would like to express special appreciation to Dr. Malo and his faculty for their dedication to the standards of excellence which have maintained the institution's reputation as the best of its kind in Tropical America.



John G. Smith



## DESCRIPTION AND MISSION

Escuela Agrícola Panamericana, more commonly known as "Zamorano", is a private, autonomous, international college established with the authorization and collaboration of the Government of Honduras. It was incorporated in 1941 as a non-profit, charitable institution in the State of Delaware. The School is 25 miles east of Tegucigalpa in the picturesque Yeguaré river valley. Zamorano is the traditional Spanish name for the old farm where the institution is located. Total farm land of the college is 15,000 acres, distributed in two large properties within a few miles of each other. The altitude of this land starts at 650 meters in the valleys, going up to 2000 meters in the cloud forest of Mount Uyuca. The combination of this elevation and latitude (14°N) make for one of the most pleasant and productive climates in the world. A large number of plant species grow successfully and with proper irrigation a long list of grain plants and vegetables yield several crops a year. This climate effectively enhances the ability of the college to train its students into practical agriculturists, and also increases the productivity of the arable land.

In the realm of agricultural institutions Zamorano is unique. It is perhaps the only one in the world operating within the confines of a large farm, where students "Learn-by-Doing" under an internship program of total immersion, in an atmosphere of real-life commercial farming which is galvanized by strict discipline and hard work. The student field-efforts result in almost 90% of the food produced by the institution, which after feeding the entire college community allows a surplus for sale. A specialized faculty supervises field work and teaches the technical courses and basic sciences. The annual program starts in January and ends in November, after 11 months of academic and farm internship. The 3-year, 33 month curriculum is designed to familiarize the students with as much variety in tropical agricultural technology as is possible in this period. Projects range from the commercial production of certified seed of basic grains, to the cultivation of about 50 species of horticultural crops.

They also include aquaculture, livestock of many types, and the technical management of about 3000 acres of forests. During the 33-month program, students take as many as 72 technical courses in basic and applied sciences and about 46 field laboratory "modules", consisting of 3-week intensive work projects which are unique to Zamorano's teaching methods.

Due to this intensity, Zamorano's education effectively concentrates 5 years of studies of the average Latin American college into 3. This fast pace makes EAP one of the most efficient colleges in the world. The students work a minimum of 10 hours a day, with additional time spent on weekend projects and routine farm duties. Understandably, graduates of Zamorano have excellent professional records. The list of alumni includes Ministers and Vice-Ministers of Agriculture, Finance and Education; Presidents and Deans of colleges; Directors of institutions of several types; and a great many

prominent businessmen, such as Presidents of Cooperatives, Banks, and Corporations. However, the most effective contribution of Zamoranos in Central and South America has been their influence in the production of food, teaching farmers, large and small, the application of modern agricultural methods. Consequently, the reputation and role of EAP on social and economic development is known throughout the world.

Zamorano accepts high school graduates, men and women, from countries in the Western Hemisphere who pass an entrance examination in Spanish, and show the necessary motivation to study practical, hands-on agriculture. As in all private institutions of learning, tuition has been adjusted upwards to reflect increased costs and continue to represent its principal source of income. However, although the level of tuition may appear to represent a hardship to many qualified students, EAP has a scholarship program to ensure that applicants are not deterred for financial reasons.

EAP is recognized today as the college with the highest level of agricultural education in Tropical America. This is the result of an unparalleled history of stability and continuity. Operating funds for the School are derived from matriculation fees, from income from the School's endowment fund and from sales of seed, livestock for breeding, and surplus products from the School's farms. Donations from private individuals and corporations are sought, primarily to support the scholarship program.

Contributions are tax deductible in the United States and in Honduras and donors may address contributions or request further information from the Director, Escuela Agrícola Panamericana, Box 93, Tegucigalpa, Honduras or from the Treasurer of the Board of Trustees of EAP, c/o First National Bank of Boston, 100 Federal Street, Boston, Mass. 02110. Checks should be made payable to "Escuela Agrícola Panamericana".





## ESCUELA AGRICOLA PANAMERICANA

### ZAMORANO in figures, 1984

Estimated value of physical plant	US\$ 36,000,000
Number of students graduated since 1946	2,240
Present size of student body	430
Number of professors and instructors	45
Number of countries represented by students and graduates	20
Annual cost per student (including food, lodging, clothing, tools, education)	US\$ 9,000
Matriculation fee for the 11-month curriculum	US\$ 4,000
Total scholarship value which Zamorano grants to each student	US\$ 5,000
Number of students receiving outside assistance	216
Duration of the intensive program in months	33
Number of courses taught in the 3-year curriculum	72
Number of research projects	70
Number of field laboratory practices (3-week modules)	45
Average annual faculty compensation	US\$ 24,000
Total number of employees	220
Total farm acreage	15,000
Annual gross farm production	US\$ 1,300,000
Grains and seed production	1,260 tons
Vegetable production	158 tons
Fruit production	234 tons
Beef, pork and poultry production	149 tons
Milk production	114,628 gal.
Egg production	34,211 doz.
Elevation of Campus	800 m or 2,400 ft.
Average annual rainfall	1375 mm or 55 in.

Location of Zamorano, Honduras: Latitude 14°N., Longitude 87°W  
(Twenty five miles east of Tegucigalpa)

## DIRECTOR'S REPORT

Zamorano has made impressive academic progress since it was established by the late Samuel Zemurray, then President of the United Fruit Company (now United Brands), who is recognized as its prime mover and founder. He envisioned a practical school for needy but motivated Latin American youth who lacked the means for obtaining a first-class scholastic education in a U.S. college. However, Zamorano owes its most distinguishing characteristic, namely a system of "learning-by-doing", to its first Director, Wilson Popenoe. It was he who most effectively imprinted his practical philosophy on the institution, and galvanized it into an efficient hands-on college where the student learns by becoming self-sufficient. Popenoe believed agriculture must be taught in an environment of strict discipline and complete dedication on a farm which ideally doubles as a college with high academic standards. He maintained that what a person learns by doing is never forgotten. His motto was: "The student who has worked and soiled his hands in the field becomes an effective farm manager, executive and leader."

Today, Zamorano serves as a model to all other agricultural colleges in the tropical world. Curiously, it is a concept difficult to imitate because it works well only under a private organization, with its own endowment, complete financial autonomy, and academic independence from government and political forces.

**STUDENT BODY, FACULTY AND ADMINISTRATION:** We started the year 1984 with 430 students from 15 countries: 144 Hondurans, 146 other Central Americans, 101 South Americans and 13 from the Caribbean region. There were 260 students with scholarships or loans above and beyond the school's normal scholarship of \$ 5,000. The School offered 72 courses: 57 compulsory and 15 elective, and 45 "modules" (field laboratory practices). In addition there were field days and technical and academic meetings throughout the year and several courses with international relevance: 1) Integrated Pest Management, with the participation of extension workers, professors and Ministry of Agriculture officers from five Central American countries; 2) Post-harvest and Storage of Grains, with the cooperation of U.S. universities and local development agencies; 3) Nitrogen Fixation in Legumes, with the cooperation of the University of Wisconsin; 4) Plant Protection, a two-week short course for Peace Corps volunteers, Partners of the Americas and for the personnel of the Ministry of Agriculture; 5) Short Course on Animal Traction, demonstrating plows and equipment to small and medium farmers.

Research projects in 1984 have continued in Animal Science with water buffaloes and much information has been obtained as to reproductive and feeding habits. During the "heat season" of November through February, the males become very difficult to manage and have to be separated from each other lest they cause damage to themselves by fighting.

Production of seed continued in 1984. The School produced a substantial amount of seed for the Ministry of Agriculture, including corn varieties such as "Hondureño Planta Baja", "Serena Amarilla", "HPB-C17" and "Guatemala Mejorada". Rice varieties produced were "CICA-8", "Yojoa 44" and the old standby "Blue Bonnett".

A research project in cooperation with the University of Florida was continued in "Factors that Limit the Symbiotic Nitrogen Fixation of Legumes in the Soils of Honduras". This project is in its third year and is financed by the USDA/CSRS/AID. Of a similar nature is another large project in progress called "Selection of Bean Varieties to Improve Nitrogen Fixation in Honduran Soil Conditions". This research is in collaboration with the University of Wisconsin and is funded by USDA/SEA/AID.

The main project that the School has in beans is called "Improvement of Dry Bean Production through the Improvement of Multiple Resistance to Disease in Honduras". This project is funded by Bean/Cowpea CRSP in cooperation with the University of Puerto Rico and Michigan State University which administers the funds. More than 70 experiments were conducted at the Zamorano valley and in several locations in Honduras. Several Zamorano graduates are being trained abroad with funds of this project.

Small but consequential research projects were conducted in soy beans. This research focuses on transmission of the "Juvenile Condition" to productive commercial varieties. The "Juvenile Condition" makes plants somewhat insensitive to photoperiod, and thus they grow to normal size before they begin flowering. The main problem of soy beans in Central America is that they grow stunted and final production of grain is very low.



Research in rice has continued with the testing of many varieties. We also tested 24 hybrid varieties of Sorghum in cooperation with CIMMYT/ICRISAT. Varieties of chickpeas resistant to drought conditions were tested in cooperation with ICRISAT/ICARDA.

The largest research project at the School continued to be Integrated Pest Management which is financed by the USAID/Honduras mission. This project employs 15 technicians and agronomists. The IPM project has produced considerable educational material and information for small farmers and extension agents.

Much of the research at EAP yields information which is immediately applied by students and instructors in the production fields of the School. The student benefits from the validation of research and he can personally witness the benefits of new knowledge in the field.

**PHYSICAL FACILITIES:** The renovation and improvement of many buildings were continued in 1984. A third dormitory was completed on the campus and was ready for occupancy in January 1985, adding 60 students more to the student body. A building complex containing four one-bedroom apartments was also finished before the end of the year. Single professors moved in and occupied these quarters. A complex of four single buildings joined as one unit around a central patio was nearly completed before the end of the year. This facility will be used as a Post harvest and Marketing Laboratory, and will supplement a small marketing stand which was inadequate for the number of students in the marketing module.

Another important facility which was designed and its construction begun in 1984 was a complex of four laboratories which are joined together around patios and pools with running water. They are Botany/Biology, Chemistry, Physics and Tissue Culture. All but the latter have a capacity of 50 students at one time. The tissue culture laboratory is mostly for research but ten advanced students could be amply fit to work with a professor and two technicians.

The Planning and Development office also spent much time in the design of the Slaughterhouse and Meat Science Laboratory. This is a major structure to replace the old facility which was inadequate and obsolete. The actual construction will begin in 1985. We are putting the finishing touches to the new sewer system which was begun a year ago. The new laundry has been completed, and the Agronomy Laboratories are already in use. We can safely say that 1984 has been the year with greater activity in the renovation of the School.



## DEPARTMENT ACTIVITIES

**ANIMAL SCIENCE:** The operations and the project of teaching have improved considerably in this department particularly in the area of meat science. Mr. Rudolf Rendel, a meat expert trained in Germany, joined the department at the beginning of the year. He has been able to reorganize the whole section of meat science and many new products are being prepared by students. Several types of sausages have been well received by the Zamorano community and the public in general. Another faculty member joining this department at the end of the year was Dr. Marco Esnaola, a Chilean with a Doctorate from the University of Reading in England, who has worked in nutrition and in swine production. Dr. Esnaola will be contributing to the expansion of the swine section which had become inadequate for the size of the student body.

The other sections of dairy science, pastures and forage crops, and goats and sheep have continued to improve. New facilities were built in the poultry and turkey section. A new cheese expert from Switzerland joined the creamery section at the end of the year. This man was partially financed by CIM, a European organization based in Geneva, specializing in the exchange and relocation of technical people around the world.

The production in Animal Science has held steady, with the possible exception of cheese which was about doubled in 1984.

### PRODUCTION OF THE ANIMAL SCIENCE DEPARTMENT

<u>Product</u>	<u>1984</u>	<u>1983</u>	<u>1982</u>	<u>1981</u>
Eggs (Doz.)	34,211	39,001	39,654	37,335
Poultry (Lbs.)	49,272	64,135	65,603	54,295
Milk (Lbs.)	1,088,965	1,042,789	758,979	684,260
Goat milk (Lbs.)	39,236	11,864	30,712	34,654
Beef (Lbs.)	161,576	199,782	120,636	119,170
Pork (Lbs.)	87,071	86,796	83,318	51,000
Butter (Lbs.)	7,434	9,439	4,860	4,128
Cheese (Lbs.)	131,420	71,613	38,958	30,007
Ice Cream (Qts.)	20,599	18,619	11,812	13,098



AGRONOMY: This department has increased in size more than the others. This reflects the number of grants which have been attracted to improve the educational programs. Several new faculty members arrived in 1984. Dr. José Alan is a Costa Rican with degrees from UC Davis and two degrees from the University of Birmingham in England. A specialist in plant breeding, genetics and tissue culture, he is working with bean breeding, and is in charge of the germplasm and tissue culture laboratories. Dr. Leonardo Corral, an Ecuadorean with three degrees in cereal breeding and genetics from Ohio State and Oregon State, has assumed responsibilities for rice and sorghum improvement. Dr. Dennis Ramírez is a plant pathologist from Honduras who graduated from Zamorano and subsequently obtained degrees from the University of Florida and a doctorate from North Carolina State. Professor Daniel Meyer, in charge of fish culture activities, has returned from Auburn University having completed course requirements for this doctorate in fisheries. Professor Nelson Agudelo has also returned, having completed his course work to obtain an MA in Forestry. Both of these men will be teaching and working on their research requirements with the help of their students.

The research work of this department was described before, but their teaching activities in special projects such as hillside agriculture and PPI (Program of Individual Production) have improved and expanded considerably.

#### PRODUCTION OF THE AGRONOMY DEPARTMENT

<u>Product</u>	<u>1984</u>	<u>1983</u>	<u>1982</u>
Corn (quintals)	18,538	21,700	8,228
Rice (quintals)	1,365*	4,045	5,239
Sorghum (quintals)	4,641	5,485	2,011
Soybeans (quintals)	163	42	200
Beans (quintals)	462	323	413
Cotton (Lbs.)	—	2,354	—
Fish (Tilapia) (Lbs.)	2,490	2,243	2,721
Shrimp (Lbs.)	636	326	285
Silage (tons)	950	702	700

\* The reduced production reflects a change in the variety.



**HORTICULTURE:** Considerable progress has been made in the production of processed products. The Food Technology Laboratory has introduced dozens of new products produced by the students. Vegetable production in general has improved substantially as new sources of water for irrigation have been tapped. More vegetables with an exotic origin have been planted, perhaps a reflection of the Japanese instructors who work in this department. New fields have been planted to rotate land that had severe problems with some pests. Donations of equipment from Sumitomo Corporation for cultivating vegetables have also had an impact on the increased tempo of activity in this department.

The condition of the citrus groves has improved as more careful management of fertilizers, irrigation and sprays, to prevent "Greasy Spot", has been implemented. We are searching for a specialist in fruit crops with the ability to teach and the versatility to work with several crops.

The horticulture department is handled with first year students and thus it is where the future Zamorano agronomist first cuts his teeth. The instructors are careful not to overflow the freshman with information or work. Professor Alfonso Torres, a veteran of about 30 years as an instructor, is a methodical, careful man who draws from his vast experience to guide, encourage and orient the new student as he progresses in field work and learns all the tricks of the veterans.

## PRODUCTION OF THE HORTICULTURE DEPARTMENT

<u>Product (Lbs.)</u>	<u>1984</u>	<u>1983</u>	<u>1982</u>
Onions	11,563	13,579	52,321
Tomato	68,000	72,585	43,980
Yuca	16,000	38,880	24,980
Lettuce	17,000	22,584	22,617
Cucumber	61,000	46,419	21,962
Carrots	22,000	12,756	18,588
Sweet Potato	7,000	23,916	15,587
Cabbage	12,500	9,514	12,690
Beets	7,300	13,056	10,880
Oranges	320,000	339,251	203,818

At the end of the year Dr. Alfredo Montes came as the new head of this department. He is a Peruvian, a graduate of the Agrarian University in Lima (La Molina), with a Masters from UC, Davis, and a PhD from the University of Florida in Vegetable Crops. As with every competent man, Dr. Montes is busy imprinting his dynamic style of work on his department.





**APPLIED BIOLOGICAL SCIENCES AND AGRICULTURAL ECONOMICS AND MANAGEMENT:** These are the two departments where most fundamental courses are taught. Since E.A.P. works as a polytechnic institution offering only a specialized area of the applied sciences, it cannot draw basic courses from other service departments as is done in large universities. Thus, it has to depend upon its own professors and facilities to supply this need. The Dean and the head of each section plan the course content stressing the needs of the agriculture curriculum. In many ways students get more academic benefits this way than what they would receive in an otherwise unspecialized, large institution. Biology, Zoology, Chemistry, Physics, Mathematics, English and other courses are given in such a way that the student can apply these fields to real life agriculture problems.

**MANPOWER STUDY:** A long expected study was begun in October, 1984. It concerns the needs of the countries of the tropical region for agronomists who would contribute to their social and economic development through agriculture. The School, with the assistance of a consulting firm, is surveying nine different countries from which 90% of its students come from. The impact of the School graduates would be determined and possible changes in training philosophy assessed. We also want to see whether our intensive hands-on education is still on target, or whether it should be adjusted to present needs by expanding the period of training.

The study is expected to be ready in one year. The Board of Trustees will review it and consider the implications, if any, during the November meetings.

*Simón E. Malo*  
Simón E. Malo

## ESCUELA AGRICOLA PANAMERICANA, INC

### STATEMENT OF REVENUES AND EXPENSES—OPERATING FUND THOUSANDS OF US DOLLARS

Condensed figures extracted from annual audit  
by Mendieta y Asociados, Representatives of  
Athur Young and Company

	Year <u>1984</u>	Year <u>1983</u>
Revenues		
Endowment Income	500	758
Gifts and Grants	1,195	860
Matriculation Fees	1,176	1,121
Sale of Farm Products/Services	<u>778</u>	<u>551</u>
Total	<u>3,649</u>	<u>3,290</u>
Expenses		
Education Departments	2,394	2,383
Operation and Maintenance	830	666
Administration and Institutional	<u>531</u>	<u>425</u>
Total	<u>3,755</u>	<u>3,474</u>
Deficit	<u>(106)</u>	<u>(184)</u>





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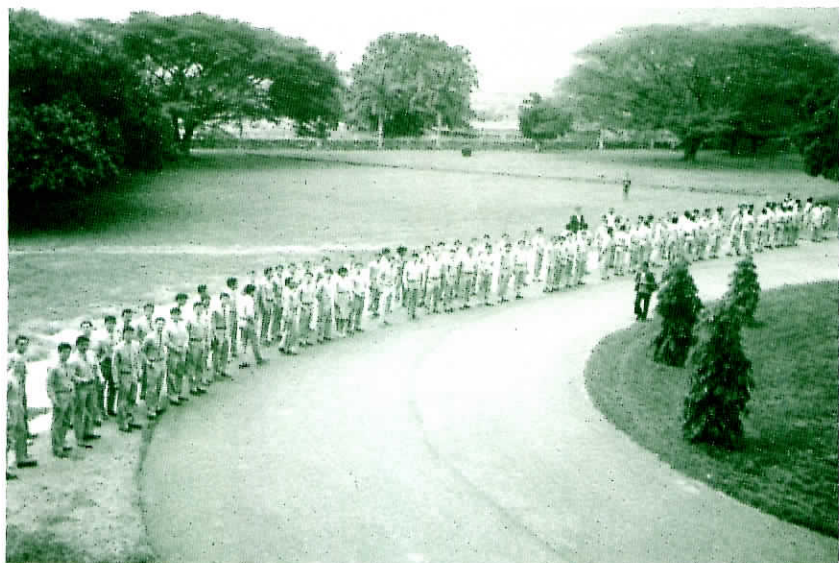
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