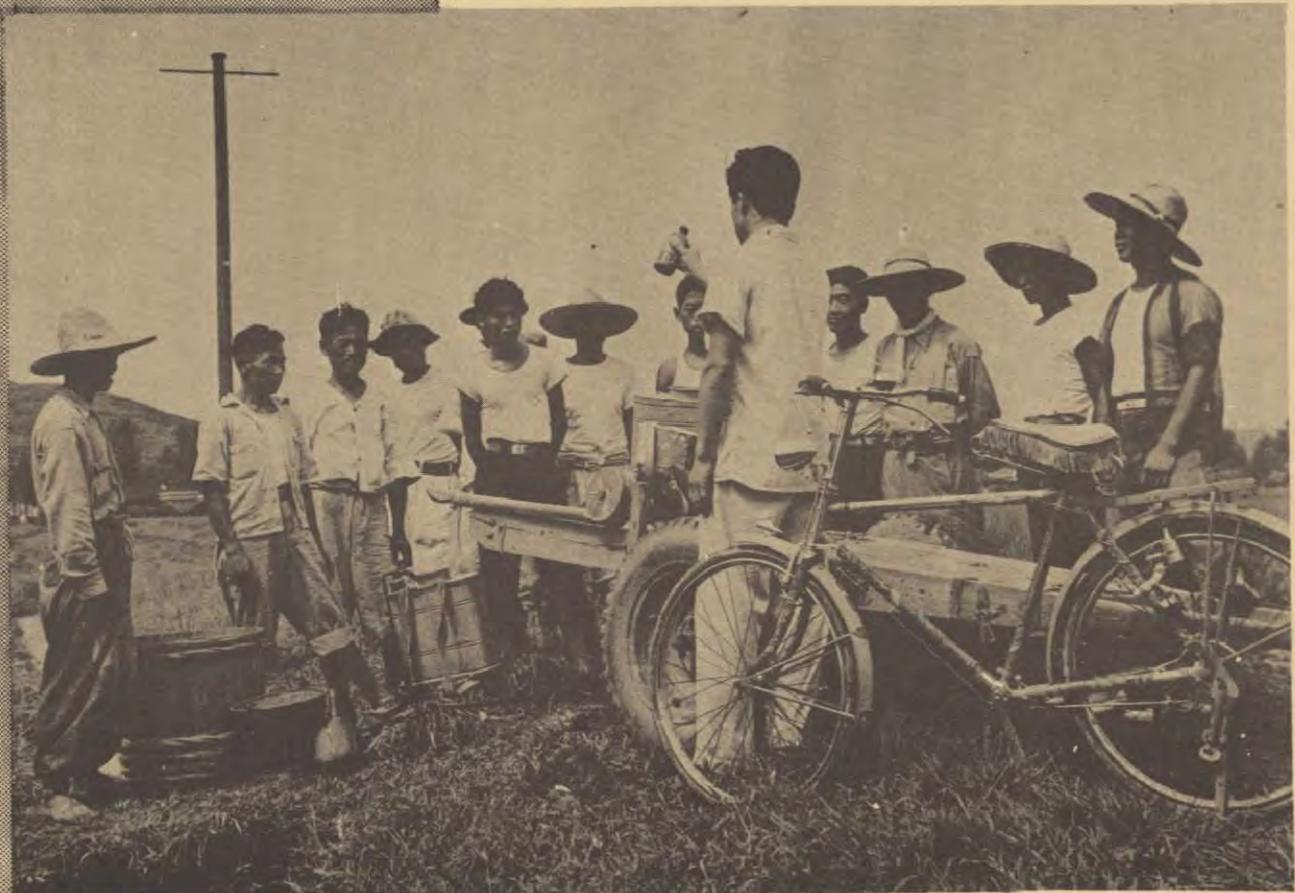




# ICA WORK IN FOOD AND AGRICULTURE



INTERNATIONAL COOPERATION ADMINISTRATION  
Washington 25, D.C.

“ Local Korean extension agent  
conducts an outdoor school for  
farmers on cultivation techniques ”

June 1961  
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# INTERNATIONAL COOPERATION ADMINISTRATION

Washington, D. C.

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## ICA WORK IN FOOD AND AGRICULTURE

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### I. Objectives and Operation of ICA Programs

The primary objectives of the Mutual Security Program are to help maintain the defensive strength of the Free World and to promote economic development and stability in less-developed countries. Most of the less-developed areas are predominantly agricultural and depend on agriculture almost entirely for their food and clothing and for exports to provide foreign exchange for necessary imports. Aiding these countries in their efforts to promote the growth of their economies and to provide a more adequate diet for their people, increases their ability to develop into strong members of free world society.

In many countries there have been urgent requirements for assistance accompanied by earnest desires of the governments and their peoples to improve their agricultural production by learning and developing new and modern techniques. ICA technical assistance and financial aid has included the development and distribution of improved seed, introduction of soil and water conservation practices, and control of plant and animal diseases and pests. These programs have been instrumental in demonstrating to these countries that application of fertilizer, improved irrigation, better seeds, improved production techniques and adequate motivation can help them to increase their food production. Since FY 1955 about \$386 million have been programmed by ICA from Mutual Security funds for various agricultural projects to assist these countries in furthering their objectives.

The agricultural program for each country is planned to provide both short-term response and long-range development. The long-range tasks involve the development of institutions, especially institutions of teaching, research and extension--the basic triangle of our land-grant college system. Credit institutions are also necessary. The marketing system may need improvement and will need to expand as production increases. Land tenure laws and practices may need to be changed to assure that the land will not be idle when there are families willing to work it. Irrigation water is a necessity for production in many of the countries. By changing tenant-landlord relationships through land reform and land distribution programs, market relationships by the organization of rural cooperatives, and borrower-lender relationships by providing agricultural credit, these programs make a significant impact upon the traditional institutions of rural societies and stimulate the forces of change and growth.

The major solution of the agricultural problem, however, will not be found in the institutions themselves nor in adding new physical resources. Rather it lies in better utilization and management of existing knowledge and resources by the farmers. Teaching alone cannot accomplish this. First there must be incentive which does not have to be great since the natural tendency of the farmer is to produce. Then the farmer must be shown by convincing demonstrations that simple practices, such as planting corn in rows instead of broadcast result in marked increase in yield, that the application of fertilizer steps up yield still more. ICA is helping many countries to establish agricultural extension services that demonstrate to farmers improved methods of doing things. U. S. technicians train a few technicians in the cooperating country and these, in turn, teach a large number and so on, multiplying the effect until a large proportion of the farmers is reached.

Approximately 1,400 U.S. agricultural technicians are assisting and training country technicians in 59 cooperating countries. About 70 percent of the U.S. technicians are direct-hire ICA personnel, the balance are on contracts financed by ICA. Most of the 1,400 technicians are graduates of land-grant colleges and experienced in working directly with farmers as county agents or specialists in their technical field.

The U.S. land-grant colleges and the U.S. Department of Agriculture have been very cooperative in providing technicians for overseas work. They have been equally cooperative in training nearly 13,000 foreign agricultural participants to date. The current rate is approximately 1,200 participants per year receiving agricultural training under the ICA program. The land-grant college system, with its unique cooperation and support from the Department of Agriculture, gives participants the opportunity to see how problems are solved in experiment stations and how knowledge is disseminated to farmers by the extension service. In addition, there were more than 900 participants from cooperating countries who received training in third countries in 1960.

In addition to the several thousand agricultural technicians receiving direct training from U.S. technicians, there are many thousands receiving indirect training, i.e., where the foreign technician trained by the American in turn trains other fellow workers. In the 59 cooperating countries, many millions of farmers have learned some new practice. An improved practice on each farm will mean a little more food produced. A little on each one of millions of farms adds up to a sizable total. Each farmer, who takes the first step of adopting a new practice which proves successful, will follow up at an increased rate to try other recommended practices. His neighbors will copy him and begin producing more.

There is another great gain from helping farmers in cooperating countries to improve their status and contribute more to their nation. As previously stated, the underdeveloped countries are predominately agricultural, better than 70 percent of the population being rural in nature. Enlightenment comes with improvement in status, and communistic agitators do not find a receptive field for their work in agricultural communities that are prospering even mildly.

ICA food and agricultural activities are closely coordinated with those of other agencies cooperating with the same countries in this field. The respective country programs undergo a detailed review by all interested parties, including the participating government so that overlapping or duplication can be discovered and resolved. International and regional activities, such as short courses, seminars, workshops, and the like are coordinated by cross-attendance at periodic regional meetings and by continuing liaison.

ICA utilizes to the fullest possible extent the technical competence of other agencies. Extensive use is made of the expertise of the U.S. Department of Agriculture. An over-all agreement with USDA provides continuing services such as operation of the ICA-approved training program for participants, insect control services, soil salinity services, and general advice and counsel on all matters referred by ICA. Similar agreements exist with the Farm Credit Administration and the U.S. Department of Interior for assistance on problems in the fields of credit, fisheries and water resources.

Relations are maintained with farm organizations, trade groups and individual suppliers to keep them advised of ICA policies and procedures relative to the procurement of agricultural commodities. Since FY 1955, more than \$767 million have been obligated for the procurement through private trade channels of non-surplus food and agricultural commodities, primarily production requirements such as fertilizer, seeds and pesticides. These commodities are sold within the cooperating country and generate local currency counterpart, some of which is used to finance agricultural projects within the country.

## II. Surplus Agricultural Commodity Programs

Surplus agricultural commodities have also made a vital contribution in the foreign assistance programs.

Section 402 of the Mutual Security Act provides that not less than certain specified amounts of the funds appropriated each year be used to finance the export and sale of U.S. surplus agricultural commodities. Since the inception of the Section 402 program in FY 1955 sales of more than \$1.8 billion of surplus agricultural commodities have been financed with Mutual Security funds. The foreign currencies resulting from these sales are deposited into special U.S. accounts and used to further the objectives of the Mutual Security Program. The equivalent of almost \$150 million of these currencies have been used to make a major contribution in the financing of agricultural projects in many of these countries.

Surplus agricultural commodities are also made available to foreign countries in several ways under the Food for Peace Program (PL 480). ICA's role in the Food for Peace program is to administer important segments of that program and to assure that the food resources made available to foreign countries are used constructively and in ways which contribute to achieving the over-all humanitarian and foreign policy interest of the U.S.

Under Title I, commodities may be sold for local currencies to friendly foreign countries which lack sufficient foreign exchange to feed and clothe their people adequately. These sales are one of the most important forms of economic assistance provided through the Food for Peace Program. Under the leadership of the Director of Food for Peace, ICA cooperates with the Departments of Agriculture, State, and other government agencies in developing these sales programs, including the amounts and kinds of commodities, the terms of sale and the uses of local currency. Since the enactment of the PL 480 legislation in 1954, sales under Title I have amounted to more than \$6.5 billion at export market value.

Some of the uses of the foreign currencies derived from these sales are administered by ICA. These programs include grants and loans to foreign countries under Section 104(e) and (g) of the Act, a portion of grants for common defense under Section 104(c) and Section 104(d) funds used for procurement of goods and services for other friendly countries. The portion earmarked for loans is by far the largest single use of foreign currency sales proceeds and comprises almost 45 percent of the total amount expected as a result of sales agreements concluded since the beginning of the program. As of June 30, 1960, the equivalent of more than \$210 million of these foreign currencies were used to finance agricultural projects in some of these countries.

Under Title II, commodities may be granted on an emergency basis for relief of the needy suffering from disasters, such as floods, drought and hurricanes as well as national emergencies brought about by other causes.

Grants of agricultural commodities may also be made to assist programs undertaken with friendly governments, such as child feeding programs, or through voluntary relief agencies, including such purposes as refugee relief. In certain instances, commodities may be granted, rather than sold, to less-developed countries to promote economic development. Upon request for assistance by the foreign government, ICA takes the lead in developing these programs.

When disaster strikes, ICA acts quickly to provide emergency shipments of food and feed to alleviate suffering. USOM personnel are on the spot. They work with the foreign governments in estimating the extent of the immediate needs for relief and rehabilitation. Grants of commodities can be made to help in this work. For example, food can be used directly to pay part of the wages of disaster victims employed on flood control or similar projects.

Grants of commodities may also be made to aid in economic development. In many less-developed countries, large numbers of people are unemployed or underemployed. Some of them are hungry, most of them are malnourished. Grants of food can provide an opportunity of using this labor force productively in relatively simple development projects, such as land clearing, earth dams, simple access roads, and irrigation and drainage ditches. Through special teams and our USOMs, ICA is cooperating with governments in planning these programs and will contribute technical and managerial assistance to carry out the projects effectively.

In the seven years ending June 30, 1961, transfers of \$937 million (CCC cost) have been authorized, including commodities valued by CCC at \$748 million and \$189 million for ocean freight costs for both Title II and for shipments of foods donated under Title III of the Act. Of the total amount, about \$452 million was authorized for emergency or disaster programs, approximately \$96 million for child-feeding programs, \$65 million for refugee relief, \$150 million for voluntary agencies including the Title III ocean freight costs, \$147 million for economic development programs, and \$27 million for other types of programs.

Under Title III, foods may be donated to U.S. voluntary agencies or intergovernmental organizations for free distribution to the needy abroad. Non-profit voluntary agencies registered with the Committee on Voluntary Foreign Aid of ICA may receive donations of food from the stocks of the Commodity Credit Corporation to assist needy people in all parts of the world. Through the charitable efforts of religious organizations, as well as non-secular groups, over 60 million people are receiving donations of foods which would otherwise remain in storage here in the U.S. The cost of processing, packaging, and handling these foods may be financed by the U.S. Government, as well as the cost of delivering them to foreign ports. In addition, Congress regularly authorizes a Mutual Security appropriation to finance the cost of ocean transportation of non-food shipments, such as used clothing distributed by the voluntary agencies to the needy abroad. Almost 12 billion pounds of food valued by CCC at \$1.6 billion have been shipped or approved for shipment during the past seven years.

ICA recently agreed to assume major responsibility for administering the food donation program. This responsibility was assumed at the urging of the Department of Agriculture and other agencies of the Executive Branch. It was felt that in view of ICA's responsibility and experience in providing technical and economic assistance to foreign countries, the agency was in a more advantageous position than other agencies to appraise the needs under the foreign donation program and to give it general surveillance. In carrying out this responsibility, ICA works closely with the headquarters representatives of the American voluntary agencies, discussing program policies and devising ways and means of improving program operations. USOM personnel cooperate with field representatives of the voluntary agencies in developing, reviewing, and approving food distribution programs.

Coordination of these programs, both from the point of view of fulfilling, insofar as possible, the most urgent needs of the people and preventing duplication or overlap of programs, is accomplished through cooperation of committees established by USOM officials.

Finally, ICA personnel must conduct appropriate audits and end-use checks in order to assure that these U.S. resources are used in accordance with the guiding principles of the Foreign Donation program and the wishes of Congress.

### III. Examples of Accomplishments

Considering the extent of ICA Food and Agriculture operations, and the diverse conditions prevailing from country to country, the batting average of accomplishments is impressive. The exceptions have occurred in programs where countries are undergoing extreme political readjustment, or severe droughts have created emergency situations. Under such circumstances it has been difficult to make as much headway as would normally be expected. Yet a frank appraisal of agricultural programs, in general, reveal gains which are encouraging. Progress has been made in many ways on the wide and complicated battle front to improve agricultural production and living conditions for farm families in scores of countries.

It is also encouraging that more agricultural colleges are being built, new research stations are being established and extension work is continuing to expand in cooperating countries. This is evidence of the faith of cooperating countries in the American democratic system of the Land Grant College with its interrelated functions designed to serve the expressed needs of the people.

Rural youth clubs, patterned after the U.S. 4-H Clubs, and club memberships are increasing at a steady rate and women's home improvement clubs are growing as more and more women become active in group programs.

The number of participants studying agriculture and home economics at home, in the United States, or in a third country is gradually climbing.

These slow general gains, though undramatic, are significant of the multitude of small but important advances made by thousands of farm people using the advice and help of U.S. agricultural technicians.

There are many specific examples of accomplishment but due to limitations of space only a fraction of the case stories submitted by ICA Missions this year can be presented here. Taken collectively, it can be seen that considerable progress has been made steadily, if not spectacularly, in many countries where ICA had programs in 1960.

## AGRICULTURAL EXTENSION, RESEARCH, AND EDUCATION

1960 produced encouraging evidence that people everywhere are recognizing that knowledge is essential to progress. In agricultural development, this means having technical knowledge, knowing how to use it, and readiness to use it. Much has been observed about the reluctance of the educated to work with their hands in training others. One American adviser reports that "the most satisfying experience of his two years was the day that an officer of the Ministry pulled off his shoes, rolled up his pants, and waded into the rice paddy to instruct trainees. The result was more respect for the ability of the officer and better training for new workers. Best of all, the idea is catching on with other officers." Such examples can be multiplied.

USOMs report 72,000 graduates from agricultural schools below college level and 11,000 graduates from agricultural colleges in 1960. While these figures reflect progress, they show the need for increased effort. Emphasis on quality and quantity of training is needed in all countries to provide the required leadership in agriculture, private, and public sectors.

The concept of the U. S. land-grant college where research, extension, and teaching are closely integrated has gained recognition in many areas. As countries have come into contact with land-grant colleges in the U. S. through institutional contract operations and participant programs, the determination to transplant the concept and adapt it to host country needs has grown. India, Brazil, Thailand, and Nigeria are among the nations making notable progress. This is proving to be the most effective contribution to agricultural development in many countries.

USOMs report 1,700 research stations and 21,000 research specialists in cooperating countries. The research function holds the key to sustained agricultural progress. This is because research must provide the answers to problems that block progress in the various phases of production, marketing, and utilization of agricultural products. The idea that research should be problem-based is gaining acceptance. Also, it is accepted that extension should provide a channel for reporting problems to the research worker as well as centering on the application of research results.

Extension work is directed toward problems that concern the farmer and his family. Programs are built around the farmer, the homemaker, and rural youth. Of necessity, there is a close relationship

between the national goals and farmers goals for improving agricultural income to the farm family. Better living for the family is based on more productive crops and livestock which in turn are part of a strong economy. To maintain and improve agriculture, the institutions that train personnel and provide essential services are required. Examples are included which show how research, extension, and education are contributing to agricultural development.

In assisting a country to develop its institutions to serve agriculture, the U. S. experience must be adapted to fit the local situation. Brazil is an example of a country that is developing an extension service closely related to agricultural credit. While the relationship is closer than that found in the United States, the principle of keeping the loan making and servicing operation separate from technical advice is observed.

#### \*\* Latin America

As of January 1961, there was a total of 2,285 extension personnel on the staffs of Extension Services in 19 Latin American countries. This is an increase of 237 professional extension personnel in 18 of the countries polled two years ago. The latest poll adds the 222 extension workers in Mexico, not previously included. The other 18 countries are Argentina, Bolivia, Brazil, Colombia, Costa Rica, Chile, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Uruguay, and Venezuela. The breakdown by positions is:

- 64 Extension Directors
- 241 Subject-Matter Specialists
- 221 Supervisors
- 980 Extension Agents
- 552 Home Agents
- 141 Assistant Extension Agents
- 86 Rural Youth Club Agents

Other examples of progress in Agricultural Extension, Research, and Education are:

#### \*\* Colombia

During the four years since the Extension Service was established in the Valle del Cauca, a sound program of rural education with adults and youth has been developed. For example, in the youth program there are now 544 boys and 552 girls in 4-S Clubs. Through development of loans for revolving funds, 89 boys have swine projects, 27 boys and

girls have dairy products; and, since March 1957, a total of 359 different 4-S members and adults have received a total of 47,580 baby chicks. Other projects are clothing, nutrition, home improvement, gardens, furniture making, and health. The poultry program has received major emphasis as a means of getting more meat into the rural diet as well as economic improvement. As a result of the supervised chicken programs, commercial production of broilers and laying hens is now a large industry in the Valle compared to four years ago. The activities of the Extension Service have been an important factor in the development of this industry.

For the first two and one-half years, the U. S. Extension Adviser served as actual director of the CVC Extension Service. At the end of this period, he felt it was time to see if the Colombian staff could run their own show. All administrative duties were turned over to counterparts and they were given the feeling of actual responsibility for the development and execution of Extension programs. They have assumed that responsibility as well and the U. S. Adviser left the post with the feeling that a good permanent Extension Service will carry on. The Colombian staff should receive technical assistance in the future to improve their program, keep them up-to-date in training, help them in program planning, and to guide them in staying with the main objectives of Extension. They definitely do now have the proper background training and the enthusiasm to carry on an acceptable rural educational program on their own initiative.

#### \*\* Philippines

The Bureau of Agricultural Extension began operations on July 15, 1952, as a separate Bureau in the Department of Agriculture and Natural Resources. For an eight-year-old, it has done quite well. In 1952, the first year of operation, 327 4-H Clubs were organized with 13,207 members. The 1959-60 report lists 4,708 clubs with 115,828 members.

Women's Home Economics Clubs, or Rural Improvement Clubs as they are called in the Philippines, started in 1953 with 952 clubs and 28,355 members, and in 1959-60 had 1,804 clubs with 46,670 members.

Farmer's Extension Clubs, an activity for training farmers to use improved methods, had 514 clubs with 33,841 members in 1953 and the last report (1959-60) showed 3,824 clubs and 101,942 members. The number of people served in 1959-60 in the campaign of the Bureau for the Promotion of Improved Farming and Agricultural Practices was 5,850,246, which is nearly 20 percent of the total population of the Philippines according to the 1960 census. The number of people served in the Bureau Program of Demonstrations of Useful Homemaking Practices and Food Utilization was listed at 1,517,271.

These activities as well as other lesser parts of the BAE program represent the growth of the Extension program in the Philippines the first eight years since organization in 1952, and add up to self-sufficiency in rice and corn production for the last two years--1959 and 1960 for the first time in the history of the Philippines.

There is a successful farm "gimmick" in this country today called the Guided Farm Program.

Launched by the Bureau of Agricultural Extension some four years ago, this program has helped to improve the lot of some lucky farmers who had been chosen as pioneers.

Take Primo Centeno of Tanaunam, Batangas, who four years ago could barely support his nine children. Today, thanks to this program, he now owns a two-story semi-concrete home, a citrus plantation, and boasts farm know-how that can equal that of any college-trained agriculturalist.

All these come from only a three-hectare farm that refused to produce more than ten cavans of upland rice per hectare before. And this is how Centeno did it:

One day in 1956, agricultural extension worker Juanito Reyna asked Centeno to be one of his cooperators for a new farm program conducted by the BAE. Knowing that he did not have to spend anything, Centeno agreed.

During the first year, Reyna and Centeno laid out their five-year farm program. Since the land was not producing enough rice anyway, they decided to divide it into sections for other crops--vegetables, pineapple, citrus, and corn.

During the second year, Centeno was already earning some ₱300 a week from his vegetables alone. Part of this money was then spent for fertilizer which was used on the rice field. Result: his rice field was producing even more than it used to although it had been reduced to half its original size.

By the third year, Centeno's net income had increased to some ₱1,300 a year. In 1958, he was able to save enough to build his home, send his children to school, and to buy his own working animals.

Centeno is not the only successful trial cooperator in the guided farm program. As of last year, the BAE had a total of 1,814 guided farms in 1,475 towns and barrios all over the Philippines.

Juan Bes of barrio San Pedro, Dacacay, Albay, lived in a three-by-five meters nipa house before he became a guided farmer. Now, he owns one of the most beautiful homes in his barrio. His income after the second year: ₱250 from poultry, ₱375 from piggery, and ₱500 from fishpond.

Luis Magno of Gabiao, Nueva Ecija, started out with a poultry project. In three years, he was netting ₱1,000 a year. This has encouraged some 25 other farmers around his farm to follow suit.

Another farmer, Luis Gonzales of Gandelaria, Quezon, sparked the citrus-growing craze not only in his town but all over the province. When he first planted citrus in his barren farm under the guidance of the BAE, neighbors laughed at him. He now owns a movie house, a jeep, and other businesses.

#### From U. S. Program

Guided farming was introduced in the Philippines by Francisco Panganiban, chief of BAE's agricultural programs division. Panganiban studied this program in the United States and Japan where it had been tried successfully for years.

To start it in this country, Panganiban first trained a few top personnel in the BAE who, in turn, transmitted their knowledge to municipal extension fieldmen. By September 1958, there were 1,245 guided farms in 1,522 towns and barrios in the Philippines.

In the town of Bogo, Cebu, former agriculturalist Felipe R. Verallo, now BAE's senior executive assistant, conducted a total of nine guided farms. They were all successful.

Like other farm programs, however, many guided farms also fail. This is the reason why the first requirement of a farmer to become a guided farm cooperator is: he must be willing to stick it out with the program for at least three years.

This is important because BAE workers spend more time with G. F. cooperators than in other work. Also, as a model in the barrio, the guided farm must be successful, and effective demonstration for other farmers to follow.

Most often, BAE workers select the farmers they want to become their cooperators in the program. They also admit farmers having at least a one-hectare or a two-hectare farm. Tenants are apt to discontinue working with the program or do not have the enthusiasm to improve their farm.

In the end, landless farmers are the direct beneficiary of this program. With all guided farms turned into successful models, there will be a great incentive for others to follow.

\*\* Iran

The Agricultural Extension Service was organized in the Ministry of Agriculture in April 1953, and during the first three years the program was directed jointly by Iranian and American Co-Managers. In 1956, full authority for operations was turned over to the Iranian staff, and the functions of American technicians became solely advisory.

During 1960, Extension Agents made direct contact with 1,375,925 farm men, women, and youth through office calls, farm and home visits, meetings, method and field demonstrations, and films. Through 31,797 result and method demonstrations, 240,472 farm people were directly influenced by Extension teaching. Nine new bulletins, in simple, understandable and illustrated form for village people, were prepared and 375,000 copies distributed. 226 Agricultural Agents completed one year of pre-service and in-service training in extension education, and 100 home agents completed six months' training and were put in the field.

\*\* Example of an Iranian Farm Family Accomplishment

Mr. Bagheri and his family started farming in 1953 by leasing a small amount of rice land. Today rice is still the main source of the family income; but, with the help of the local extension agents, Mr. and Mrs. Bagheri and family have learned how to make use of improved farming practices, increase their annual income, and have a much happier and more fruitful life. Says Mr. Bagheri: "I have to honestly admit, a few years ago I was using farming methods we had used in this area for hundreds of years. We produced barely enough to provide food and clothing for the family. When we had guests, we would have to buy our vegetables in the bazaar. My daughter now has a 4-D (4-H type Club) garden project and she has produced enough vegetables for our own family use and enough to sell 450 rials worth to our neighbors. The whole family has learned how to properly plant and care for a garden and how to use the vegetables we produce. My son Nasser learned weaving in his 4-D Club from the Extension bamboo weaver. Within the last year and a half, he has sold over 4,000 rials worth of bamboo baskets and mats. He has also taught the girls in their 4-D Club how to weave bamboo. From their 4-D project income, my daughter and my sons now have savings accounts in the bank. I helped organize a cooperative credit society in our village. We also have about 3,000 hybrid chickens in the village; we have learned how to control pests on our crops and livestock. Our wives and daughters have learned how to properly prepare daily diets, and how to sew and make many of our clothes." The Bagheri family is deeply appreciative of the help the Extension Service has given them and they are now wholeheartedly helping their fellow villagers by serving as village Extension Leaders. Their daughter Monir is president of the girls' 4-D Club and the two sons, Nasser and Behruz, are active in the boys' 4-D Club.

\*\* Spain

Five training courses for prospective assistant agents have been held during the past five years to take care of "manning" the outposts of the rapidly expanding Spanish Extension Service, created in 1955. The Service now has 110 agencies in eight operating zones with a Zone Agent trained and promoted up from the ranks in charge of each zone. Each of the 110 agencies has an agent and an assistant and 10 have home demonstration agents. Out of the 321 prospective assistant agents selected for training in these five courses, 258 qualified for appointment. The courses, lasting for four months, are held at El Encin, a government-owned institution and a part of the Agricultural Research Institute located near Madrid.

Trainees are enrolled in the courses primarily to learn extension methods and their application under actual field conditions. The workshop method--"learning by doing"--is used principally rather than the lecture-discussion approach. To qualify for selection as a trainee, each candidate must have completed either four years of agronomy or a full veterinarian's course. Some farm management specialists, however, can also qualify if they pass the entrance exams.

\*\* Viet-Nam

At Biao, one hundred and twenty miles north of Saigon on an 1,800 acre campus, stands the new Viet-Nam National College of Agriculture, fountain-head of the future leaders and technicians of the nation's agricultural economy. Heretofore, the only agricultural educational facilities which existed in French-Indo China were located in the now Communist-held North Viet-Nam. Under an agreement between ICA and the Vietnamese Government equipment and furnishings not available in Viet-Nam, and technical advisers to assist in planning the organization and curriculum of the institution, were provided with American aid funds. All other costs were to be borne by the Vietnamese.

The first students began their studies in December, 1955, in three temporary classrooms. Today, there are 500 students and 27 modern buildings. The college now has three divisions--Agriculture, Forestry, and Animal Husbandry. Two courses of instruction are offered for regular students, plus some special seasonal courses for government officials. The first course offers an intensive three-year program which qualifies its graduates to serve as agricultural technicians in district and provincial agencies. Presently enrolled in this course are 260 students, including 35 girls. The second course, also three years in length, corresponds to the university

level and provides trained engineers in the fields of agriculture, forestry, and veterinary science. This course opened last year with 65 students, five of them women. Some will be accepted for two years of advanced study, after which they may qualify as Doctors of Engineering. In addition, selected students from both courses are being sent abroad for two to six years' study in foreign universities. Some will become professors at the College upon their return. This year, 35 students are attending American universities under this plan. The College puts the strongest emphasis on combining academic learning with practical farm experience--teaching by doing. All teaching is closely related to the actual conditions of farming in present-day Viet-Nam.

At present, there are 13 resident professors and 14 part-time visiting professors. The major problem to expansion of the College, necessary to meet the heavy volume of deserving applications, is that of obtaining qualified teachers. To help solve this problem, ICA provided funds for ten more foreign teachers and a five-man team of agricultural advisers during the 1960-61 school year.

The total cost of building, equipping, and operating the College in its five years of existence has amounted to the equivalent of \$2,200,000. Of this amount, less than \$320,000 has been provided in American-aid dollars for equipment and salaries of American technical assistants and advisers. Australia and New Zealand provided some power equipment and machinery.

It will be many years before this new college will be able to provide all of the agricultural experts the nation needs, but a good beginning has been made.

#### \*\* Turkey

Short courses continue for Agricultural Extension Agents and Technicians. This has become "big training business" in Turkey. Nearly all extension workers are included in at least one short course each year and many local village leaders are included in the courses. A large expansion of this activity is planned for 1961 (Turkey has 775 extension supervisors, specialists, and agents and over 800 local leaders).

#### \*\* Peru Agricultural Demonstrations

The agronomy section of the Peruvian Extension Service has been carrying on very successful field demonstrations, in cooperation with extension offices, to introduce better agricultural practices. For example, in Casma a demonstration field produced 56 percent higher yields of field beans than

those grown by usual practices. This is a very sizeable increase. It has appreciable economic significance to this section because it is the leading bean growing area of Peru. Beans are a very important item in the national diet and such increases greatly increase farm income and supply of food. The improved practices responsible for the increase in yield included seed treatment, closer row spacing, application of fertilizer, proper cultivation, controlled irrigation, and application of fungicides and insecticides for disease and insect control.

\*\* Jordan

All extension and home economics personnel have now been transferred to the Jordanian Government rolls, 53 persons having been transferred at one time.

\*\* Brazil

State Extension Service to become part of University. The extension work in the Northeast was started by Associacao Nordestina de Credito e Assistencia Rural (ANCAR), a semi-private organization with no local ties. In 1958, this work was broken down to state level operational organizations by ANCAR negotiating joint support agreements with each of five states in which the program operated.

The trend toward the U. S. land-grant college type extension service has continued. Negotiations have been completed for ANCAR-Ceara (extension service in the State of Ceara) to become a part of the University of Ceara, January 1. It will be known as Servico de Extensao Rural do Ceara.

In taking in the Extension Service, the University will create a Directorate of Extension and Rural Sociology. The Directorate will be attached to but hold equal status with the School of Agriculture.

\*\* Philippines

Gratifying progress has been made by the College of Forestry, University of the Philippines, during the past six years and its prospects for the future are bright. ICA has been giving important assistance to this college since 1954 and its development since that time has generally followed guidance supplied by ICA.

Starting from the low point reached when the college was almost completely destroyed during the Japanese occupation, with its library

and research records burned and only one small building left, it has now regained the stature of a first-class professional college. It now has an enrollment of 361 and a well-trained faculty of 24 housed in modern buildings, adequate instructional equipment, and a rehabilitated technical library. Despite its growth, however, the demand for professionally trained foresters still exceeds the supply. At a recent conference among interested government agencies and private forest products interests, the conclusion was reached that a minimum of 75 graduates, at the bachelor degree or higher level, will be required annually by industry and government for an indefinite period. The college plans to increase its faculty to 44 by the 1962-63 academic year in anticipation of a student body of about 600.

## AGRICULTURAL CREDIT, MARKETING, AND COOPERATIVES

In any country, regardless of the stage of its development, a dependable source of credit to agriculture is one of the essential factors contributing to an increased agricultural production and to a better living for farmers. Of the three economic factors of production--land, labor, and capital--agriculture is usually in greatest need of capital. In most underdeveloped countries, there is an abundance of labor and in some there is sufficient land. But even where the pressure of population on the land is heavy, capital applied in the right way can intensify production.

The most immediate effective use of credit in agriculture is usually short-term credit for production purposes such as fertilizer, better tillage, insecticides, better feeding of poultry and livestock, and for other purposes which will have an impact upon production in the near future. Intermediate term credit for such items as simple equipment, establishment of orchards or other perennial crops, purchase of breeding livestock, and for minor irrigation projects and improvement of water spreading structures are effective uses of agricultural credit where the increased production resulting therefrom provides repayment ability and a better level of living for the farm family. Under appropriate circumstances, long-term loans can be effectively used for the purchase of land, and for land improvement and development.

However, credit cannot be the source of capital for all agricultural development. Major irrigation works such as large dams and expensive land clearing are types of capital expenditures which are likely to be beyond the repayment ability of individual farmers who will benefit from these larger and more expensive projects. The development of community services such as schools, domestic water supplies, roads, and other similar services would also fall into this category. It would be expected that this type of capital investments would be supplied from national or local government services, and not from normal agricultural credit sources.

During 1960, there were 46 United States technicians assigned to underdeveloped countries to advise the host government on the development of credit and marketing programs, in many cases through cooperative organizations. In addition to regular two-year agricultural credit advisers, ICA has furnished many countries high-level short-term consultants for surveys, analyses, and recommendations for improving their agricultural credit agencies and marketing services.

These efforts have resulted in the training of 3,840 host country staff members in the field of credit; 7,364 in the principles of cooperatives; and 641 in the field of marketing. In addition, 178 participants have studied agricultural credit in the United States and third countries; 67 in the principles, organization, and operation of cooperatives; and 81 in the field of marketing.

Many countries have found that the most successful means for farmers to obtain credit, purchase their necessary supplies, and market their farm products is through cooperatives. It is often true that soundly organized and operated cooperatives are the only means whereby small farmers can obtain credit and supplies on a reasonable basis, or sell their products to good advantage.

In countries where such conditions exist, Missions should attempt to interest their host governments in efforts to develop credit and marketing programs through cooperatives on a sound basis, which requires capable and adequately trained managers and informed members.

Examples of the benefits brought to farm people in various parts of the world through ICA technical assistance in these fields are:

\*\* Libya

American advisers have been working with Libyan officials of the National Agricultural Bank of Libya to develop and implement sound loan policies and practices, and to train bank personnel. The first provincial branch of the Bank was opened on March 4, 1957, and two more branches have opened since. The purpose of the Bank primarily is to assist farmers and small industries closely related to agriculture by extending credit to them as needed. The Bank is having a favorable effect in Libyan agriculture by financing the purchase of seed, equipment, and other essential items required to carry on farming operations. Since the beginning until March 31, 1960, the Bank has made 9,400 loans for a total of \$3,133,000 equivalent. Of this amount, 59 percent has been repaid in full. Most of the loans have been made to small farmers and borrowers in all provinces are learning to shoulder the responsibility for repayment of loans when due and to use proper procedures for meeting financial difficulties attributed to crop failures. Inability of borrowers to pay back loans due to conditions beyond their control, such as drought, justifies the granting of renewals. This type of credit tends to encourage Libyan ownership of land.

\*\* Korea

Farmers in Buchone Gun, Kyonggi Province, depend largely for their living on sale of peaches on the fresh markets of Seoul and Inchon. In 1958, a group of them organized the Buchon Horticultural Cooperative, one of whose purposes was construction of a small canning plant where part of the peach crop could be processed for year-round sale instead of depending upon the short fresh-peach season. The group obtained an industrial loan through the Agricultural Bank for construction and purchase of equipment.

But at the end of the 1958 peach season, only 2,000 cans had been processed; most of the growers had sold their crop before the plant was ready for operation. Sales of canned peaches and prices received for the fresh crop did not supply a sufficient cash surplus to pay the balance, and the loan became delinquent.

In 1959, USOM advisers and the Bank's representatives decided the Buchon project was technically sound, and made it a pilot project. Additional operating credit was provided by the Bank, and the members were helped to organize and manage their cooperative soundly. Each member agreed to market a percentage of his crop in cans instead of fresh. Merchandising methods were taught the members and plant management group.

Results have been outstanding. In 1959, over 27,000 cans of peaches were processed; yet, the members were able to market sufficient fresh fruit to repay in full the delinquent 1958 loan and provide the farmers with their normal income as well. Later sale of canned peaches liquidated the 1959 processing loan in full and provided a sizeable additional income to the members.

A much larger percentage of the 1960 crop went through the cannery than in 1959. The plant was moved to a new location and its volume and efficiency were increased. Employment in the plant helped increase earnings of the members; and if other crops are to be processed, as has been discussed, much of this work will come at a time when the families would otherwise be unemployed.

\*\* Brazil

The Caixa Economica (State Bank) of Minas Gerais set aside Cr\$ 1,000,000 (\$5,500) to finance 4-S Club projects. This is the first move to provide credit for 4-S Club members in Brazil.

## CREDIT COOPERATIVES

### \*\* Panama

In September 1954, the Section of Cooperative Education was established within the Agricultural Extension Service under a new law, Decree Law 17. IGA employees working with Extension personnel and volunteer leaders organized over 100 study groups and trained over 2,000 members and leaders. A year and a half later the first group of farmers organized the first credit cooperative to receive its charter.

Today, there are 32 such cooperatives in Panama. As of June 30, 1960, these cooperatives have handled in excess of \$1,000,000 in financial transactions. During the fiscal year ending June 30, 1960, an increase of more than 100 percent has been achieved in financial operations by these cooperatives. Nearly one family out of each fifty in Panama now receives help from his credit cooperative each year. This ratio is increasing constantly with more than 500 families a month asking for and receiving credit.

### \*\* Korea

During the second quarter of 1960, a major break-through was made in the field of providing Korean farmers with crop production financing at the season when it is most needed, on proper terms and at a reasonable rate of interest. In the past, this essential type of credit has not been available except from usurious lenders whose interest charges average 8 percent per month.

Beginning in April 1960, agreement was reached to undertake a program of production loans through the Korean Agriculture Bank using aid-generated counterpart funds as loan resources. Loans were made available for all types of seasonal crop production purposes and a minimum as well as a maximum loan basis was established so as to make the programs as effective as possible and to reach as many people as possible. At the time the loan program began the Agriculture Bank provided great latitude to its branch managers so that loans could be made quickly and efficiently. Response was tremendous, and demand far exceeded available fund resources. During the first four months, over 215,000 loans were made for an amount slightly in excess of \$15,380,000. This period of time covered the major crop production months and the loan demand slacked off; however, some additional loans were made during the fall months. In view of the success of this initial program, the Korean government and USOM have agreed that it should be greatly expanded in 1961 so that the demand for such credit can more nearly be satisfied.

\*\* Vietnam

Lack of funds, absence of storage facilities, difficulty in finding markets are among the important problems being attacked under a joint Vietnam-American Aid project to assist the small rice producers.

This category of farmers is the backbone of the rural economic structure of the nation. Since the application of the Land Reform Program, the ranks of owner-producers are being extended considerably with the addition of former land tenants whom the Government is helping to become independent rice growers.

In an effort to assist these small rice producers overcome their difficulties, the Government, with American aid, has promoted and helped set up agricultural cooperatives in most rice-growing areas of the country.

Known as Rice Storage and Credit Cooperatives, these organizations provide services and carry out a certain number of activities for the benefit of their members. The cooperatives grant production loans at a low interest, 1 percent per month, to farmers who need funds to plant their crops. At harvest time, rice price generally decreases, causing serious financial problems to small rice growers who cannot afford to sell their crops at a loss but, on the other hand, are faced with an urgent need of money to prepare their next crops. Here the cooperatives play a vital role in solving these farmers' anguishing dilemma. By providing storage facilities to warehouse the crops and granting commodity loans, the cooperatives help farmers hold out until they can sell their products at a good price. Finding a market for their members' crops is another important service rendered by the cooperatives. In 1959, the Supply and Marketing Cooperation fulfilled a contract for supplying 13,609 tons of paddy and 6,080 tons of milled rice to the Vietnamese Army. It is estimated that the Army bought 31,000 tons of rice in 1960.

Other services by the cooperatives include the purchase and supply of fertilizer, rice seeds, bags, and milling at reasonable prices. The straw mat, bag-making, and straw rope-making machines are also made available to farmers at no cost during lull periods to make articles for home use.

Since 1956, the cooperative movement in Vietnam has made considerable progress. Thirty-five rice storage and credit cooperatives have been set up in 14 provinces extending services to 23,134 farm families who cultivate 84,476 hectares (approximately 212,000 acres) of rice land in 305 villages. Production loans amounting to around \$550,000 were granted

to the cooperatives by the National Credit Office during 1959. During that year, 15 more warehouses of 60 ton capacity were completed. In addition, various courses have been jointly sponsored by the Vietnamese Government and the American Aid Mission to train cooperative personnel in management, bookkeeping, and equipment operation.

Que My Thanh is one of the 31 cooperatives in South Vietnam which are grouped into a Supply and Marketing Cooperative Federation, the first of its kind in Vietnam. There are 900 members who cultivate 3,600 hectares (9,000 acres) of rice serving six villages. As an example of self-help over 600 members of this cooperative pooled their efforts to dig a canal linking the cooperative warehouse with the river to give access to a canal boat serving all cooperatives in the South.

Ultimately, the cooperative movement is expected to extend services to the whole farming population of Vietnam, estimated at over one million families.

## LAND TENURE AND AGRARIAN REFORM

An increasing number of countries are recognizing the importance of land tenure not only to economic efficiency but also to social and political stability. Increasing discontent among landless farm workers and tenants, and increasing needs for improved agricultural productivity, are combining to lead many countries to set up tenure reform programs, to which ICA is giving assistance. These programs include, singly or in combination, the following types of activities:

1. Land colonization: Illustrated by Guatemala, where since 1954 about 4,000 families have been settled on tracts of about 50 acres each and are carrying on quite intensive farming operations on lands which were previously totally or largely unutilized. An additional 4,200 families have received small land parcels for part-time farming uses.

2. Land redistribution: Illustrated by the activities of the Land Tenure Administration of the Philippines, which is in charge of purchasing estates, subdividing them and arranging for former tenants to buy these subdivisions through long-term purchase contracts. The LTA and predecessor agencies have settled some 30,000 families in this way with little or no complaints from former landlords. High land prices, marketing, credit, and farm management are the principal problems associated with settling these farmers.

3. Improving tenancy arrangements: Illustrated by the tenure security portion of the Land Reform Program of Vietnam, which provides a legal basis for equitable and enforceable relationships between landlords and tenants. It is estimated that 4,000,000 individuals and 5,000,000 acres of land are favorably affected by this program.

4. Land consolidation: Illustrated by the activities of the Land Consolidation Service of Spain, which is consolidating into workable size units the many tiny fragments into which individual farms have been broken up through centuries of inheritance practice. At the death of the father, all property is customarily divided evenly among all the children with the cumulative result that at present a single average-size farmer may have his land broken into as many as 100 scattered plots. In 1960, about 200,000 acres were so consolidated. The popular demand from farmers for assistance of this kind far exceeds the resources of the Land Consolidation Services.

Improved tenure arrangements, of any of these types, however, are not in themselves meaningful unless adequately supported by the necessary

institutional framework, as is cogently stated in the Introduction to the Report of the Latin American USOMs Seminar on Agrarian Reform, held February 21-24, 1960, in Santiago, Chile.

"Agrarian reform should consist in peaceful evolutionary processes directed toward the development of rural societies comprised primarily of owner-operators of family-size farms and of tenants who have the opportunity to become farm owners. Such an organization of agriculture holds most promise of providing the economic efficiency and capital formation necessary to agricultural improvement and general economic development. Satisfying as it does the deep aspirations of rural people for economic independence, personal security, equality of opportunity, and human dignity, it provides also the requisites for political and social stability.

"A family-farm agriculture cannot develop or survive in an inadequate institutional environment. Improvements must be made in institutions that affect the access of farm families to property rights in land technology and management know-how; capital and credit, markets, non-farm employment, community services, educational services, security in regard to health, old age, and unemployment; and participation in the privileges and responsibility of citizenship. Secure possession of land, through either ownership or lease, is basic to improvement of the welfare of the farm family, but without adequate access to other resources and services, possession of land alone will do little to improve the level of living of the farmer."

ICA is assisting not only in improving tenure arrangement, but in establishing the institutional framework within which the desired family owner-operated type farms can survive and prosper.

## HOME DEMONSTRATION WORK

One of the important aspects of the "New Frontier" is the emphasis on social development. This has been pointed up most clearly in the recent Act of Bogota. Social development begins in the home and it is to the home that society must look for any change in this phase of living.

In most of the less-developed countries people live under very hard conditions--especially in the rural areas. The economic struggle to get food, shelter, and clothing is so arduous that there is little time or energy left to even think of anything else.

Home demonstration work, through teaching farm women and girls to do better and more efficiently the things they are doing already, can help women achieve a little more time for their family members. Agents can then more adequately inform and interest them as to the importance of education, family relationships, community activities, and other phases of social development.

Women all over the world want better lives for their children than has been their own lot. Sometimes, however, they do not know and cannot imagine what would make for a more satisfying existence. Home agents, whom the women know and trust, can open the doors to understanding and help women start their families on the road to "social development."

Some indication of the extent of home improvement work as recorded from 1960 country reports are:

There are 34 U. S. Home Demonstration Advisers currently serving in ICA programs overseas. Among the nationalists working in the field of home economics in the Extension Services of cooperating countries, there are 70 Home Improvement Specialists, 2,964 agents and supervisors, and 10,290 village-level workers serving 3,440,006 women. At this time, there are 21,771 organized home improvement clubs with 503,284 members in the countries where ICA has programs. During the past year, over 60,000 public events, such as fairs and field demonstrations, were held in connection with home economics. In the field of training, 5,789 women participated in in-service courses; 41 came to the U. S. for study; and 68 went to a third country for training under ICA sponsorship.

The following are some illustrative examples from several countries:

\*\* Brazil

For centuries rural people in the Northeast Brazil Region have "scrimped along" with the traditional mud-brick, home-made stove and other primitive utensils in what passed for a kitchen. Back-breaking labor, inefficiency, and poor sanitation characterized this ancient operation. The problem facing USOM/Brazil and Brazilian home economists was how to introduce the idea of a rural kitchen with running water, controlled heat, a cooking oven, and other improvements. The answer may have been found in the time-proved Extension tool known as the result demonstration.

In selecting a starting point for demonstrating the possibilities of an improved rural kitchen, it was agreed that the average rural family simply could not afford the cost of necessary materials. However, a higher-income family, living among the rural families, might show future possibilities to the masses.

The Cosme Carvalho family, of Pacajus in the State of Ceara, while not typical, lived essentially as the majority of rural families in that area. While their home conveniences and comforts were similar to their neighbors, they did employ twelve people to help them process mandioca, local starch staple providing basic food. Their situation proved opportune for demonstrating an improved kitchen.

Advised and assisted by home economists of the USOM trained Brazilian extension service, the Carvalho family made six basic changes in their kitchen. These involved a stove with iron furnace, oven, sink and service table, cupboard, shelves, and a water pump. The cost of materials and labor amounted to approximately \$32.50, a prohibitive figure for the average farm family of the Northeast. On opening day, 60 people visited the demonstration kitchen, while more than 100 have seen it since.

What benefits did the homemaker receive as a result of the demonstration rural kitchen? The time spent preparing lunch was cut by one hour. She now needs 40 percent less wood for fuel. Dishwashing is much easier and this homemaker feels less tired after work. The kitchen is brighter and cooler and the smokeless stove doesn't heat the room. Working time not only has been cut shorter, but clothes stay cleaner. One of the personal rewards for this homemaker was that she learned how to make oven-baked "bolo de batata," which she couldn't do before.

Perhaps an even greater achievement than aiding one family was the great morale builder that the demonstration kitchen provided the Brazilian

home economists. With new confidence in what they can do, these women will no doubt be in the forefront in changing the face of rural kitchens in Brazil.

\*\* Turkey

Meal planning guides in bright colored columns are going like "pumpkin seed out of South Dakota prize county fair pumpkins."

Every village woman in Turkey wants one to brighten her otherwise too-dark kitchen. If for each meal she chooses one food from each color column, she is likely to have a better balanced meal than just serving what is nearest at hand.

The bright colored pictures in each column head makes it unnecessary to read. Most of the women who can't read memorize the names and soon know exactly what is in each column.

"In fact," said one village woman, "the poster is a challenge for meal planning and including a greater variety at each meal and for one day."

Mrs. Selma Agmen, Ministry Home Economist, in traveling to a technical school was asked by a military officer what she was carrying. The large roll under her arm aroused his curiosity. "It's just what we need in the mess hall." "How many copies could we get?" He got his copies.

Teachers in the school milk feeding program are asking for copies for a basic nutrition lesson on dairy foods in 2,000 schools.

Every girl student in the agriculture technical school will take two copies home at spring vacation. One is for her own home and the extra for a relative or neighbor family.

Many schools in Turkey are boarding schools. The first step in good nutrition and good eating habits is to practice it at school, at home, at the restaurant. Even the school cooks are not adverse to using a meal planning guide if it can be put on the wall where they cook and if it is easily read and understood.

"These are our first beds!"

Speaking was a neatly-dressed, alert village man in Turkey's Ankara province.

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"These are our first beds!"

Speaking was a neatly-dressed, alert village man in Turkey's Ankara province.

As he talked, he proudly displayed a set of three nested beds made from specifications supplied to the local home economist by ICA Home Economics Adviser Mary E. Border.

"What did they cost?" "Well, it's this way," said the local home economist, "the village carpenter made them as a sample and as an advertisement and gave them to his friend."

In Isparta, the Home Economics Extension worker said, "We started out with the larger of the three beds. The family could afford one now. The other two will come later."

The Home Economics Extension worker in Edirne explained that the nested bed project is an excellent one in which to start a home furnishings program. After the beds are made, we work on mattress making. Then we do divan covers and comforts. This all comes as a natural sequence in the village main room which often doubles as a living and sleeping room.

#### \*\* Philippines

Useful gadget's make homemaking easier and more fun. So say Filipino housewives who recently staged the first gadget contest held in the Philippines. The occasion was National Home Extension Day held on November 29th in honor of Maria Orosa's birthday. Miss Orosa was the founder of home economics work in the Philippines and met an untimely death during World War II while serving as an extension worker.

Versatile members of Rural Improvement Clubs not only designed the gadgets exhibited but demonstrated their usefulness as well before a capacity crowd. The event drew twelve entries and was held under the auspices of the Bureau of Agricultural Extension, Diliman, Quezon City, Philippines.

Want to know how to make laundering a pleasant chore? Ask Mrs. Estelita Schrevinas, member of the Arellano Club who put together a washing unit to do just that. Or perhaps you'd like to have a general purpose room divider. Mrs. Amparo Santos of the Fidel Antipolo Club designed and demonstrated such a device. It was attractive, too, and in addition served as a table, clothes dryer, book case, and magazine rack.

If neither of the items mentioned strike your fancy, how about a utility cart, a corner shelf arrangement, service tray set, or handy garden cart? If not, you still have an all-purpose table, a colorful garden seat, sawdust stove kit, or dual-purpose table to choose from.

So, if none of these ring the bell, you have ideas of your own. Well, tell it to the HIC members; they'll have it for you at the next annual show in November.

\*\* Bolivia

Rural leadership training is being emphasized by home agents to develop volunteer adult leaders from whom to establish local advisory committees on rural home improvement. The objective is to develop constructive program proposals on which there will be greater rural participation (by women) since the problems will be those felt to be the most urgent.

Food preservation is being stressed by demonstrations and local people are building smokehouses of local materials where meat may be smoked and cured for future use. Home sanitation, improvement of living quarters, and clothing projects are being conducted. Agents have taught people how to construct better cook stoves and prepare foods that will improve family diets. These demonstrations have totaled nearly 400 for the year with nearly 4,000 in attendance.

\*\* Ecuador

She had been told it wasn't possible. A community as poor and downtrodden as Trapichillo--where the tenant farmers didn't even own their huts--could never take an interest in the H-F or Home Demonstration Club programs. Don't all projects take money? Why this place has no lights, no water, no pride.

Graciela Martinez, Home Demonstration Agent in Loja Province, in southern Ecuador disregarded all the forewarnings about this community. "If I can just get one small home improvement project started to show them it doesn't take a lot of money," she told the Extension Agent, "we'll have the battle half won."

The single improvement project was initiated--the opening of a window on the west wall of a house which had previously had only the door for admittance of light. All of the newly organized Club members crowded close to see what was going on and if they could help.

"The rest came easy," says Graciela. All of the girl members of the Trapichillo H-F Club, and even some of the boys, were eager to give the Home Improvement idea a try. A window here, a little whitewash there, a flowering ornamental, or a small stool covered with bright flowered calico added a little cheer to the drab interiors of the hut.

The Club members are remodeling their mud houses one by one; but, best of all, they can look upon the future with a little more hope and enthusiasm.

## RURAL YOUTH WORK

To interest farm girls and boys in some type of 4-H work is of great importance in the world today. With the threat of Communism prevalent in all of the newly developing countries, the wholesome democratic procedures which characterize this activity may form an effective bulwark against Eastern influences.

It is also vital in nations where food is insufficient to meet human needs, that rural youth not only become interested in remaining on the land but eager to learn the newest and best methods of producing more and better food and feed.

A third reason for promoting rural youth work is because the extension service is a family service. It is more rewarding and the results are better if mother, father, and children all plan and work together to achieve a more satisfying home and farm life. This planning and working together is also a good beginning to "social development."

The story of ICA work with rural youth can be partly told by some of the statistics for the year 1960. At present, there are 15 U. S. Rural Youth Advisers serving abroad. In the Extension Services of cooperating countries, there are 69 National Extension Specialists in Rural Youth assisted by 626 agents and supervisors and 5,442 village-level leaders. These served over a half million (583,942) youth during the past year. Currently, there are 15,945 organized youth groups (for the most part patterned after the U. S. 4-H Club model), with an active membership of 999,259 boys and girls in the 43 countries reporting. During the year, these boys and girls participated in 44,916 public events which included fairs, field demonstrations, and contests. In the field of training, 25,763 agents and leaders participated in on-the-job courses; 28 went to the U. S. for study programs and 33 studied in a third country under ICA sponsorship.

### \*\* Greece

There is a regulation in Greece prohibiting the organization of young people under eighteen years of age. A law was passed in October 29, 1950 (Law 1547) which became effective in January 15, 1951, making it possible to set up an organization such as a 4-H Club under the approval of the Ministry of Agriculture.

The Extension Service started their clubs along with the Extension program in accordance with features of Law 1643. In 1949, the American

Mission had made an early effort to stimulate youth programming in Greece by securing the service of a 4-H Club specialist. However, apparently the people were not ready to participate in this type of program. Since 1950 a Greek member of the Extension staff of the Mission, who had developed the rural youth program under the Near East Foundation before the war and with guidance by the USOM/Greece staff members, has carried on the work with the Greek Extension workers.

Through these cooperative efforts, there are today 600 4-H Clubs composed of boys only, 10 composed of girls only, and about 200 composed of both boys and girls. This, too, is a significant innovation in that during the earlier years it was not considered appropriate to have a Club composed of boys and girls. However, after considerable work, the feasibility and desirability of clubs composed of both boys and girls was demonstrated so that now the Extension Service is making a general practice of organizing mixed groups of boys and girls into 4-H Clubs.

The important aspects of 4-H Clubs are: developing leadership, improving livestock and crops by first presenting the improved practices to the boys and girls who adopt them, and they in turn persuade their parents to adopt the improved cultural practices. Development of leadership and community spirit is the primary objective.

Leadership development coming from the 4-H Clubs may well be illustrated by the fact that there are at least 50 presidents of communities and cooperatives who are former 4-H Club members.

Each Club now provides its own annual program of work, according to the needs of the village or community. In the program of work, they include a community or a village project. For example, some selected the public square for beautification. Some Clubs have selected community recreation. Some Clubs have adopted a community project of killing the flies. Others adopted reforestation of the hills surrounding the communities. Others have built or repaired the community office in exchange of the right to hold their meetings there.

#### \*\* Philippines

Almario Garcia was one of ten children born to a poor tenant farmer in Hacienda, Rizal. Despite the lack of decent clothing and often hungry when he left for school, his thirst for knowledge drove him on. Reaching high school, his kind uncle in Morong took him in so he could continue his studies, but upon condition that he work in the house in return for his food and lodging. While he was in Morong, he met a neighbor, Mr. Aurelio Pascual, who turned out to be an agriculturalist with the Bureau of Agricultural Extension. Almario became interested in

Mr. Pascual's poultry project to such an extent that the latter loaned him 150 chicks on condition Almario work in the project, follow all the rules and regulations of the 4-H Club upon enrollment, and pay Mr. Pascual back for the cost of the chicks when the project began returning some proceeds.

The lad worked hard, built a bamboo poultry house, read all about poultry from literature borrowed from Mr. Pascual and friends, and carefully tended his chicks as they grew.

During the Provincial 4-H Club Rally in 1953, Almario was chosen to represent Rizal Province. He was overjoyed to have been selected as a delegate, but he had no decent clothes to wear and no money to buy any. However, Mr. Pascual and Miss Flores, a 4-H Agent, came to his rescue and solicited enough money to buy him a pair of pants and a T-shirt which the boy wore for four days at the rally without changing. He attended all the 4-H contest activities and came through with flying colors as one of the national winners. But again he faced a problem--his clothes had become soiled from the four days' activities, and how could he present himself at the Manila Hotel for the big event where he would receive his award from the President of the Philippines and in front of a large audience? And again Miss Flores helped out by buying him a T-shirt from her own money and a pair of pants borrowed from another 4-H contestant. That night Almario received a four-hundred peso award which enabled him to attend and graduate from Central Luzon Agricultural College with a degree in Bachelor of Science in Agricultural Education.

Meanwhile, he continued with his poultry project and repaid Mr. Pascual the original cost of the chicks. He helped his brothers and sisters go to school and shared the costs of the household expenses. At the same time, he went out of his way to interest others in starting poultry projects, often loaning some of his chicks to encourage them further.

Today, Almario is an instructor in the Rizal National Agricultural School. But he still continues his poultry project and from his 600 layers he supplies eggs to the Manila market.

#### \*\* Korea.

Since the inception of Korean 4-H Clubs in 1946, much progress has been made in giving boys and girls of Korea the opportunity to work together in constructive educational activities which contribute to the development of the nation. In the last two and a half years, the number

of active 4-H Clubs and enrolled Korean boys and girls have more than doubled. For example, in August 1958, there were 2,945 active clubs with 79,345 boys and 34,107 girls enrolled. As of December 31, 1960, the number of active 4-H Clubs had increased to 7,477 with 167,091 boys and 70,331 girls engaged in 253,162 projects. There is a wide range of projects and those in livestock, poultry, upland crops, rice, food making and preservation, sewing, and home improvement are some of the major programs. The 4-H Club Livestock Bank has made real progress the past year and now has over 1,300 hogs and other project materials on loan.

Indicative of the great interest of Korean people in 4-H Club activities is the attendance at rallies, contests, and public demonstrations. In 1960, 350,000 attended one or more of the 162 county, 10 provincial or national 4-H rallies, and contributed 37 million hwan in prizes for the contest winners (approximately \$50,000). Prizes were awarded for the best gardener, the best poultryman, the best public speaker, the best cook, the best dressmaker, and many other titles conferred in the contests. People flocked to see the competing exhibits of handicrafts and production skills of club members and to watch their demonstrations of some new farming or home improvement practices. Many of the local programs were broadcast over local radio stations and events were covered by reporters for their newspapers.

4-H Club activities fill a need of Korean youth who have no similar organized form of activity of this nature; thus the need for 4-H in Korea is many times greater than in the United States where there are many types of constructive activities for young people. But there is a shortage of extension rural youth agents in Korea. Although the agriculture extension staff has developed remarkably the past three years, each worker has the responsibility of teaching some 17,000 farm people. Thus, with present teaching methods, transportation facilities, communication media, the staff is spread much too thin to give maximum support to the 4-H Club program.

#### \*\* Ecuador

Arturo Medina, 17-year old 4-F Club member, lives with his parents and five brothers and sisters on a large farm in Loja Province in southern Ecuador. Arturo's father works as a tenant farmer, or sharecropper, for the landowner and earns less than \$300 per year.

All of his life, Arturo dreamed of somehow obtaining a college degree and becoming an agricultural extension agent. He wanted to be able to help other farm boys as he had been helped through his 4-F Club. But how could such a dream become a reality for a tenant farmer's son?

Arturo still carried his dream in his mind in 1958 when as a 4-F Club member he received a pair of pure-bred Ducoc-Jersey pigs from Heifer Project and the Servicio Cooperativo Interamericano de Agricultura. His careful attention and dedication to his new project brought both praise and recognition from his 4-F Club Adviser. Arturo was also beginning to demonstrate that illusive quality--leadership. In August of that year, he was chosen by his fellow club members and the Extension Agent to represent the club at the first national 4-F Club camp. Arturo had never previously been more than fifty miles from home. The 400-mile trip brought him new experiences and new acclaim. The gathering, by popular vote, proclaimed little Arturo Medina National King as the most outstanding 4-F Club member in Ecuador.

Back at home, Arturo's sow brought forth ten offspring. With the eight pigs raised from the first litter, Arturo was able to return two pigs to the Extension Service pig chain program so that another interested member might have an opportunity to raise pure-bred hogs. Arturo even sold one of fattened hogs for \$ 1,500 sucres, or about \$90 dollars--an unheard of price in this area. After Arturo had paid some feed bills, he still had some money with which to enlarge his swine program.

Now Arturo could begin to think about his lifelong ambition. He discussed with his Extension Agent and his Club leader the possibilities of continuing his education. The money from the sale of pigs could pay for the cost of tuition but could never support him for several years in school--a long distance from the Medina home.

The Loja Provincial Extension Agent and the U. S. Extension Adviser stationed in Loja again asked Heifer Project if it could give Arturo another helping hand. "Would it be possible to secure a scholarship for this outstanding 4-F Club member so that he might achieve his lifetime ambition and be better prepared to serve himself, his family, and his country?"

Finally, in November 1960, all arrangements were made for the 4-F King to receive a Heifer Project scholarship to study at the United Nations Agricultural School in Otavalo, Ecuador.

The realization of Arturo's dream was now a matter of time and work.

\*\* Vietnam

An example of what can be accomplished in rural youth work is cited in the case of Le-Van-Anh, a sixteen-year-old 4-T (4-H type) Club member of a village in Gia-Dinh Province. In February 1959, he received a young

sow from the "Pig Project Bank." This sow farrowed eight pigs, one of which was returned to the bank in repayment. He sold four pigs for the equivalent of about forty U. S. dollars repaying about ten dollars back which he borrowed from his father for feed. He also gave his father the equivalent of about three U. S. dollars to help buy a calf and used about twelve dollars to buy clothes for himself and his brothers. The remainder he saved for buying feed for his pigs. The sow is expected to farrow again in about two months. According to his agreement with the "Pig Project Bank," he will deliver one pig from the new litter to help another 4-H member get started. The original sow and the remainder of the pigs will belong to Anh. Also, in an area of about 1,000 square meters, he has raised corn, beans, cabbage, and onions for family consumption. Recently, he constructed a compost shelter to help fertilize his crops. He will keep careful records to show the value of compost in crop production.

#### \*\* Costa Rica

A Heifer Project sponsored by ICA and the Agricultural Extension Service of Costa Rica provided 22 heifers and one bull, all of the Jersey breed to be used in the 4-H Club Project development. The animals were placed with selected 4-H Club members with the understanding that the second female offspring from each of the animals would be turned over to the National 4-H Club organization to assure continuation of the project.

With constant care and attention by the new owners, the animals developed satisfactorily after arrival and later in the year the extension adviser conducted a training school in fitting, showing, care, and management of dairy-calves. Each boy and girl learned how to do the work of washing, clipping, trimming of hoofs and horns, and general grooming under the supervision of the county agents. At the National Dairy Cattle Show, twenty-two of the owners exhibited their animals for the first time in the history of their country. The older dairymen were astounded at the grooming of the animals and the showmanship ability of the youngsters.

As a result, a new interest has been stimulated in 4-H Club livestock projects. 4-H Club members have since exhibited their animals in four other districts of the country. Presently, there are 4,500 members of 4-H Clubs in Costa Rica. From these will come the country leaders and livestock breeders in the next generation. Their experience and fundamental knowledge gained in 4-H Club work is already contributing to the initial improvement and development of the livestock industry in Costa Rica.

## AGRICULTURAL COMMUNICATIONS

An agricultural information service provides a vital built-in support to the development of a strong extension program. Scientific knowledge based on agricultural research has to be adapted to the understanding of farm families and made available through every suitable media. Close cooperation between subject-matter specialists and information specialists help improve acceptance of useful ideas and methods among farm people in cooperating countries.

Agricultural information services also help meet farming emergencies such as outbreaks of plant or livestock diseases or pest invasions. It is also instrumental in helping to win legislative support for research, education, and other activities essential to the development of the agricultural economy; and it keeps the public and their officials informed of ongoing activities.

ICA is endeavoring to establish efficient information services in cooperating countries where there are agricultural programs. Currently, there are 25 technical advisory positions in Agricultural Extension Information where U. S. technical advisers are assisting in building agricultural information services and training nationals in the skills of communications. Some idea of the extent of these operations can be gained from a total of summaries submitted by 43 cooperating countries for the calendar year of 1960. For example, there are 1,448 nationals of professional grade working in agricultural information services. Together, they produced 50,314 farm radio programs, 2,448,059 farm news releases, and they prepared and printed 9,176,081 publications on agricultural farm family topics. Mobile sound-film trucks put on nearly 14,000 motion picture showings on agricultural subjects. Over 800 local personnel were given in-service training in agricultural communications while others were sent to the U. S. or a third country for specialized training.

Some specific examples of information activities in cooperating countries are:

### \*\* El Salvador

The Technical Information Section was established under the joint Technical Cooperation Program in 1957 to provide support to the Agricultural Extension Service, train Ministry of Agriculture personnel in the preparation and techniques of disseminating agricultural information, and to provide the production of bulletins, circulars, exhibits, and all types of audio-visual aids to help farmers improve their agricultural practices.

The success of its activity has convinced the Government of El Salvador of the Section's value and it has requested that it become a full-fledged Service of the Ministry of Agriculture in 1961.

\*\* Iran

The Extension Information Division supported all phases of the extension program with bulletins, circulars, posters, films, new releases, radio programs, and photographic work during the past year. Nine new bulletins were printed. A total of 375,250 copies of these and other publications were distributed. A total of 520 news releases and 263 radio programs were prepared. Fourteen mobile motion picture units made a showing of 1,225 film presentations to 496,437 farm people. One information training school was conducted for 24 local information workers.

\*\* India

Agricultural fairs are important means of introducing new ideas and informing the public. At the New Delhi All-India Exhibition, large numbers of farmers, government officials, businessmen, and visiting dignitaries from other countries saw an effective display entitled "The Most Important Man in India--The Farmer." The story of the Indian farmers' problems and what was being done by the Government through research, extension, and education was portrayed through photographs, projected slides, sketches, working models, and demonstrations. Approximately 40 large illustrated panels were used to present the various elements of the exhibit. For example, every irrigation method used in India was shown by working-scale models. Prime Minister Nehru, visiting the exhibition, invited all progressive farmers in India to attend.

\*\* Paraguay

In less than an hour after the local fair at Encarnacion was officially opened on December 23, 1960, fifty producer members of the H-C Clubs and the Farmers' Committee and Agricultural Cooperatives sold all their produce. The quantity of products sold is indicated by the following: 30 young pigs, 10 sheep, 150 hens and chickens, 20 ducks, 4 turkeys, 80 dozen eggs, 100 lbs. of cheese, 500 doz. plums, 1,300 lbs. of grapes, 150 water-melons, 50 cantaloupes, 1,000 pineapples, 300 doz. bananas, 100 doz. sweet corn, 1,000 lbs. of onions, 300 lbs. of potatoes, 800 lbs. of tomatoes, 600 bunches of lettuce, 300 bunches of parsley, 300 lbs. of carrots, and 60 Christmas trees. 1,500 people attended and two broadcasting stations carried the inaugural program over the air.

## TECHNICAL AGRICULTURE

To sustain the growth of an agricultural economy in the development of any country requires the accumulation of specialized technical information and the flow of this information from the source of origin to the masses of farmers. This requires many experimental stations with counterpart personnel and the assistance of the U.S. technicians or advisors in securing this data in the country under local conditions as rapidly and economically as possible for passing on to the extension personnel for distribution to the farmers. Some 500 ICA advisors assist on technical problems in the various fields of agriculture.

Accomplishments in these activities are numerous and in the aggregate are impressive. In most countries the information must be somewhat elementary and have a practical application to a specific problem common to a given area. For example, easier methods for implementing improved cultural practices to produce more harvests with labor, and know-how available must be developed and demonstrated to the rural people. The traditional methods used must be replaced with more modern methods without adding materially to the production costs. Seen in this light, each year the masses of farmers are adopting new and improved farming methods of agronomy, entomology, horticulture, soil and water conservation, irrigation, drainage, water spreading, crop storage, animal and poultry husbandry, veterinary medicine, farm equipment and the improvement in breeding for better crops, animals and poultry.

Some of the results are:

### Agronomy

In the past year 46 crop advisors and 54 soil advisors have been assisting the cooperating foreign countries in developing adapted varieties of crops, improved cultural practices, soil surveys, and soil and water conservation practices to the diversified conditions within each country.

Practically every cooperating country has seed improvement activities in varying degree of implementation. It has been reported that approximately 125,600 demonstrations with improved seeds from many crops have been made during the past year. These demonstrations have been placed in scattered rural areas so that the farmers can observe the superior performance of the improved and adapted varieties when grown along side their mixed inferior varieties under similar climatic and soil conditions.

The proper methods for the storing of seeds in inexpensive and obtainable structures have been demonstrated at 1715 sites to prevent rodent damage and other losses from weather factors.

The control of insect and disease damage in the field is one of the important practices in the list of improved cultural methods which consist of proper land preparation, weeding, fertilizing, irrigation, planting good seeds, harvesting and storing. Surveys indicate that around 295,000 demonstrations have been completed on privately owned farms and 4,900 on governmental lands by the cooperating countries with the assistance of U. S. crop technicians. Naturally, other practices besides the use of insecticides have increased the production of the crops and have been included in these demonstrations to encourage more farmers to adopt these improved methods on their farms.

In some countries large amounts of fertilizers have and are being used. However, the use of fertilizers should be incorporated only when all improved cultural practices have been accepted and are being used by the farmers. During the year approximately 2,568 demonstrations have been placed on governmental farms and 466,370 demonstrations of fertilizers on privately owned lands in all countries involved in USOM programs. The effectiveness of the demonstrations in the past is indicated by the figures which show that a total of around 6,000,000 short tons of fertilizers were used in all countries consisting of 2,238,000 of nitrogenous materials. Only 13,842 short tons of nitrogenous materials were used in AFE regional areas with 2,302,000 short tons of phosphatic materials or 76 percent of the total consumption in all four regions due possibly to the availability of large mines of phosphate rock in Northern Africa.

Erosion control by vegetative means is the most economical method in most cases to practice by the farmers. He can supply the labor involved in the spare time of his family and can be, therefore, included in self-help program. The term erosion herein includes water and wind effects. In the past year 1,091 demonstrations affecting 76,504 acres have been initiated in showing the need for the establishment of a permanent cover in farming grazing areas. Contour cultivation is not a common practice in the cooperating countries, but is one long recognized for saving soil and water from leaving the field. During FY 1960 around 2,000 demonstrations were implemented involving around 2,000,000 acres in all regions. The data indicated that the African area is the lowest region in actively demonstrating erosion preventive practices.

Some specific examples of accomplishment are:

\*\* Guatemala...

Kenaf, a jute-type fiber used in manufacturing bags for coffee, sugar and other products, has become an established crop in Guatemala. Local requirements in Guatemala exceed  $2\frac{1}{2}$  million bags annually, representing a million and one-half dollar market.

Kenaf production was developed in connection with the establishment of a bag factory built in part with funds from the Development Loan Fund. The factory opened in July 1960 and production now exceeds 100,000 bags a month with 80 percent being exported to neighboring Central American countries. The factory now uses more than 3,000,000 pounds of fiber a year, but when fully operational it will need in excess of 9,000,000 pounds. The locally produced kenaf was used without the customary retting process, thus greatly reducing the effort and expense of the farmer in preparing the fiber for market. Since less than 1,000,000 pounds of fiber was produced locally, much of the new fiber was imported pending expansion of kenaf production.

Under the ICA technical assistance program, research with cooperating countries has produced new and better varieties of kenaf. The variety of seed planted in 1960 was the result of joint efforts of ICA and Cuba. Known as Cuba 108, this variety has the distinct advantage of being disease resistant and a good producer. Yields were high, about 3,000 pounds of dry fiber per acre. New varieties not yet released but recently developed by the joint efforts of USOM/Guatemala and the Instituto Agropecuario Nacional are far less sensitive to day length and will greatly extend the planting and harvesting period of the crop.

Some types under development show promise of allowing harvesting throughout the year without the plants becoming over age. This will allow greater use of expensive equipment and also provide a continuous supply of fiber. The crop is grown on the coastal plains on soils that, for the most part, had not been used for crops. With expansion in production, kenaf will be rotated with corn and it is expected to replace considerable acreage of rice and cotton.

\*\* El Salvador...

Insect plagues of agricultural crops are a serious problem in El Salvador. During the past ten years data on more than 300 pests has been compiled by the combined efforts of eleven Salvadorian agricultural workers and their U. S. technical advisor of the joint agricultural technical cooperation agency. (SCASA). This mass of information was reviewed and found to be of such accuracy and volume as to make it a veritable gold mine for the agricultural industry of El Salvador. Many technicians, extension agents, farmers, vocational schools and agricultural students collaborated and made contributions to the work.

The resultant book, Entomologia Economica De El Salvador, is a 255 page illustrated publication in Spanish. It will serve many needs and it has been accepted as a valued school reference. It gives the insecticide industry essential information about the more destructive pests attacking economically important crops. It aids the agricultural industry by providing keys to the identity of specific pests and means for their control. It is a stimulus to entomologists to expand established facts and to seek additional data about the insect population of El Salvador. The book is considered to be a monumental contribution to the economic entomology of El Salvador.

\*\* El Salvador...

It has been demonstrated that tomatoes can be successfully produced in the rainy season in El Salvador. With proper attention to varieties, culture, insect and disease control and drainage they can be grown economically during the wet periods. During the rainy season of 1960 experiments carried out at San Andrés under the joint technical assistance program and yields were obtained averaging  $12\frac{1}{2}$  tons per acre from five leading commercial varieties. At the same time, the best local variety, which is a small fruited pink type, averaged 8.6 tons per acre. The best yield from small fruited paste varieties was from Red Top which averaged  $18\frac{1}{2}$  tons. The best commercial variety was Sioux with an average of 16.2 tons.

\*\* El Salvador...

From 1949 through 1953 El Salvador produced corn approximately equal to her consumption. With the increase in population in excess of 3% per year, it became apparent that more corn would have to be grown. If El Salvador were to remain self sufficient, some means must be found to give this increase. This could be obtained through an increase in acreage or an increase in yield

per unit area. Unfortunately there was neither an increase in acreage nor average yield per acre. In fact the more fertile lands were being planted to cotton and this was shown in the decline in average corn production per acre as well as a decline in the total number of acres planted.

In 1955-56 the average yield per acre had diminished by an average of 30%. In 1956-57 with the introduction of hybrids, developed and tested cooperatively with the Rockefeller Foundation of Mexico, this decline was halted. By 1958-59 two new hybrids of local origin had been produced. In the 1960-61 crop, approximately 10% of all the acreage was planted to hybrid varieties and this acreage accounted for approximately 25% of the total country production. With a total production of 3.5 million quintales, self-sufficiency in corn has practically been obtained.

\*\* Guatemala...

Until recently, few onions were produced in Guatemala. The people are fond of them as sizeable quantities are imported from the United States and sold at 25 cents per pound or more.

In 1958 field demonstrations by the Guatemalan Extension Service and U. S. extension advisors showed that excellent yields of high quality, long keeping Bermuda onions could be raised in Guatemala. As a result, sixty acres were planted during 1960. With the high price of onions and yields of from 3 to 5 tons per acre this now appears to be the most profitable vegetable which can be grown in Guatemala. It is estimated that in addition to local demands of some 500 tons an additional 500 tons can be exported to El Salvador.

One typical small farmer in the Amatitlan area planted 1.5 acres, and realized a net profit of 300 dollars per acre. He was too poor to purchase fertilizer and had to irrigate by hand. A neighbor who used fertilizer and irrigated properly produced 15,000 lbs. of onions per acre for a net profit of 1,200 dollars more than the value of the land.

The onion growers in the Amatitlan area have now agreed to sell their crops wholesale at 7 cents per pound. This will give them a good cash income and provide the consumer with adequate supplies at a reasonable price.

\*\* Taiwan...

Farmers have increased rice production by one-third in the past ten years, and they are managing to keep ahead of the rapid population increase of the island. Taiwan usually grows three or four crops a year and they can plant paddy rice in dry seasons because of the excellent irrigation facilities which have been developed.

American technical cooperation has played an important part in this economic progress which presents a sharp contrast between conditions under the Communist controlled China mainland and those of the free people of Taiwan.

\*\* Philippines...

Barrio Palkan is among the many communities that mushroomed out of the wilderness of Mindanao when the island was opened to settlers. Within and behind the beautiful faces of these peaceful barrios are the grim stories of hard-working men who made these places what they are today.

One such example is 35 year-old Mr. Juanito Buaya, an immigrant from Panay who today is recognized as the number one cabbage raiser in Palkan, Polomolok, Cotabato. He chose Palkan as his new home, not because he was a cabbage expert to start with but because of the convenience of living near his relatives.

Juanito's first concern when he and his family arrived in Mindanao was to look for a means of living. His problem was what crop would give him the most return. He tried rice, corn and vegetables. His family did not starve, but Juanito's philosophy of life is not only to have three square meals a day but to clothe his children, send them to school, build a better home for the family, have better and more nutritious food on the table and a better standard of living in the home.

With these thoughts prodding him he planted abaca. Mosaic diseases came and all his abaca and hopes were wiped out. But his dream for his family improvement persisted. He shifted to cabbage. But his cabbage project was besieged with numerous problems. If diseases missed his seedlings in the seedbed, pest and diseases caught up with him in the field. It was a constant contest between man and the merciless agents of nature. Before meeting one of the government extension agriculturists, Juanito was on the edge of despair. He related his story and his problems to his agriculturist and together they mapped out a plan. Instead of one man to fight and face the destructions of nature, an ally had come in the person of the government agriculturist. This time Juanito was not alone with his bare hands. He was armed with the latest findings of science. From the Bureau of Plant Industry, they secured chemicals and sprayers to demonstrate the control of pests and diseases. Together, they worked out improved methods of preparing the seedbed, care of the seedlings and the plants in the field.

Six months later, Juanito's face no longer held the grim desperate look. Instead, he is a picture of a contented farmer with happiness and pride showing in his face. He is a man who is winning a long and hard fought battle.

Juanito's first record was five thousand heads of cabbage from his one-half hectare. At present, his average production per hectare is 15,000 marketable heads which grossed him ₱2,250.00 at ₱0.15 per kilo. Taking out his expenses for fertilizers, chemicals, seeds and hired labor, his income from one hectare is ₱1,950.00.

Today, his children are in school, his family is better clothed, and more food is on the table. He was able to build a new house and more than that he is now recognized as a cabbage authority and his advice on cabbage growing is eagerly sought and given in the barrio.

\*\* Paraguay...

A part of the program for crop improvement through quality seed has been the importation and distribution through the sale at cost of quantities of vegetable seed. Conducted over a period of years this has resulted in the use of fresh vegetables in the diet. A great demand for the seed has developed. To help meet this demand and to further develop vegetable production, the Agricultural Experiment Station at Caacupe is attempting to develop procedure by which seed of at least some of the vegetables can be produced locally. Small quantities of seed of onions, carrots, radishes, tomatoes and peppers have been produced this last year.

The most successful to date has been the production of lettuce seed. The seed is being planted in small plots. The plants are later transplanted in larger well-prepared and well-fertilized plots where water is available for supplemental irrigation. Production is during the winter months. The seed has high germination as compared to the imported seed which loses much of its viability during transport.

\*\* Ethiopia...

The most nearly complete fund of information on Ethiopian soils compiled to date is a 200 page scientific report prepared by Dr. H. F. Murphy of Oklahoma State University and published by the Ethiopian Imperial College of Agriculture and Mechanical Arts. Dr. Murphy was director of research and professor of soil science for the Ethiopian college for over three years, working under a university contract which the University of Oklahoma has with ICA for assisting the Imperial Ethiopian Government in the establishment of an agricultural education system.

The book, "Soils of Ethiopia" will be useful to the college's agricultural extension agents who are working with farmers, landowners, ministries of the government and scientists who continue the study of Ethiopian soils. Soils of 27 areas of Ethiopia and Eritrea are discussed in detail. Dr. Murphy travelled about 25,000 kilometers in these regions to obtain 2,600 samples of soil and he was assisted by several of the students. Each sample was examined in the college laboratory and by scientific methods determined its content of materials on which growing crops feed. Samples were obtained in eleven out of twelve provinces.

Many Ethiopian farmers are using good farming methods. Many are checking the washing away of soil by terracing the land, by planting crops which make a heavy sod, and by suitable tillage methods. There are also many who make good use of farm manure and legumes, and in numerous sections farmers are increasing crop production by bringing water from streams, through irrigation canals.

\*\* Libya...

To help conserve Libya's soil from wind and water erosion and to utilize the natural rainfall that occurs largely in the winter months, the Soil and Surface Water Conservation project was initiated by the construction of water-spreading dikes in the Sine area of Tripolitania in 1954. This demonstrated that run-off water from the hills and mountainous areas could be harnessed and spread over broad areas for range improvement. It also served to control flash floods. Thereafter dikes were constructed in many other areas of Libya. In this connection,

construction of terraces are tied in with Soil and Water Conservation program, concentrating the water on crop and orchard lands and controlling erosion.

Nearly 20,000 meters and dikes and 201,755 meters of terraces have been constructed in Libya improving thousands of hectares of crop and range lands. In drought years, about the only green patches to be found are behind dikes or where terraces have helped to saturate the soil during winter rains.

Up to 300 percent increase in crop production has been noted on land behind dikes. Terraces are credited with increasing production up to 200 percent.

This project operates on a self-help basis, with farmers preparing sites for construction, and furnishing the labor, land, and gravel. The Libyan-American Joint Service provides materials and technical advice.

In this category five irrigation and flood control dams have been constructed in Tripolitania, not only controlling run-off from watersheds, but also improving adjacent crop and range lands.

Over 100 Libyans have been trained in this field of work.

## L I V E S T O C K

The demand for animal protein is increasing in all countries in proportion to population increase and additionally in relation to social, cultural or economic development. Animal protein is a basic requirement for an adequate nutritional diet of all people.

Livestock improvement programs are in operation in 38 countries to assist host governments to increase production of livestock products. The U. S. livestock personnel assigned to these countries are emphasizing improved management, feeding, breeding, disease and parasite control in all classes of livestock. ICA technicians are training employees of host governments in extension methodology and techniques to apply at the production level.

Continued emphasis is being placed upon the upgrading of native cattle in various countries through crossbreeding by artificial insemination. In other countries animal unit production is being emphasized by controlling animal diseases, internal and external parasites, feeding and breeding (through selection and culling) and other simple management practices. In-service training programs for host government employees are receiving greater emphasis.

The following statistical figures were compiled from reports to illustrate various livestock activities in 1960:

There were 133,763 cows inseminated to upgrade local cattle, and 348,983 cockerels distributed to farmers. To improve hog production 7,885 breeding hogs were distributed to farmers and 4-H Club members. These animals were produced on livestock farms operated by host governments.

Through extension and training activities, ICA livestock personnel conducted 1,349 sheep shearing, dipping and drenching demonstrations to introduce improved management practices to sheep growers. There were 2,867 host government employees trained in livestock extension methods and simple animal husbandry practices, with 158 selected employees receiving training in animal sciences in the United States.

Some specific examples illustrating progress made in ICA livestock programs are:

### \*\*COSTA RICA

Dairymen in Costa Rica recognized the benefits to be derived from technical assistance several years ago. As a result, some outstanding herds of dairy cattle have been developed, as demonstrated by the Grand Champion Holstein bull and the class of Jersey cows exhibited at the biennial dairy cattle show held at Cartago in September, 1960. The Agricultural Extension Advisor to the Costa Rican Government, for many years Extension Dairy Specialist in Missouri and noted cattle judge, judged the show. He not only placed the classes in their respective order, but took plenty of time to explain to the dairymen why some

animals were superior to others. In appreciation of the work of the judge, the dairymen reciprocated by giving a banquet in his honor on the final day of the show.

One of the major contributing factors to dairy breed improvement is attributed to the use of artificial insemination and accompanying advice and assistance rendered by inseminators and county agents, initiated in 1953. Some of the better bulls of the Jersey, Guernsey and Holstein breeds have been imported from the U. S. for use in this program. Its popularity is proven by the increase in the use of the service. The annual number of inseminations has increased from 179 in 1953 to 7,476 in 1960. This is recognized as being one of the most efficient programs of this nature in the world from its early stage of development. In 1953, 96.6 percent of all cows bred dropped calves. Although there has been some decline in efficiency with the increase in number of cows bred, records show that 91.9 percent of cows bred in 1960 conceived.

The artificial insemination program is operated totally by Costa Rican personnel trained locally, with the exception of the Chief Veterinarian, who has received training in the U. S.

Plans are presently being developed to transfer the management of this activity -- a part of the cattle improvement program of the Ministry of Agriculture and the United States Aid program -- to a cooperative group of farmers on December 31, 1961, with the understanding that technical assistance and guidance, when needed, will continue to be provided by the Ministry of Agriculture. In this manner, the persons being served will be able to determine the type of services rendered and to adjust the quality and efficiency of the service by the charges levied.

#### \*\*LIBERIA

The poultry program in Liberia illustrates the need for acceptance of technical assistance programs to improve production for domestic consumption. The Department of Agriculture and Commerce has been very concerned about the acute shortage of protein in Liberia and has taken three steps toward a solution:

1. Establishment of Game Reserve Law enforced by the Bureau of Forest Conservation.
2. Development of a Freshwater Fisheries program, with emphasis on farm fish ponds.
3. A poultry improvement scheme, briefly described as follows:

Ten years ago there was only one private commercial poultryman in Liberia besides the Firestone Plantation, and several thousand tribesmen owned flocks of from 6 to 15 birds of nondescript breeds.

Since then the prices of poultry have skyrocketed. Live chickens jumped in price from 50¢ to \$2.50 each; eggs from 24¢ to \$1.00 a dozen; and imported eggs cost as high as \$1.20 a dozen -- prices which the average family could not afford.

The Department of Agriculture and Commerce sought to increase local production to bring prices down to increase consumption and supply of protein. During the past ten years non-descript flocks have been replaced or improved by new blood, which has stimulated the interest of local flock owners. The DAC imported 1,500 baby chicks and the USOM imported 2,300 of improved breeds from the U.S. These were used in setting up 41 demonstrations, which are resulting in young and older farmers' participation in the poultry development program.

There are now 30,000 laying hens of improved breeds on 19 commercial projects and this number is growing at a satisfactory rate. For example, the Central Farm and Poultry Supply establishment of Kakata imported 60,000 baby chicks in 1960, while concessions and private individuals imported an estimated 20,000, and 15,000 were hatched locally.

The Agricultural and Industrial Credit Corporation, an agency of the Liberian Government, made a total of 33 loans amounting to \$102,000 in 1960, most of it loaned to poultry and vegetable producers. In addition, the Bank of Monrovia has agreed to make loans to small and medium-sized poultry producers recommended by DAC.

The DAC has acknowledged USOM's contribution to this project with grateful appreciation. This contribution consists of technical assistance and some material support in setting up demonstrations throughout the country.

\*\*KOREA

When the joint USOM-K ROKG poultry improvement program was first launched in 1956, official government statistics showed that there were then 14,027 Korean farmers who had poultry flocks of 50 birds or more. At that time the total number of poultry of all kinds in Korea amounted to 9,031,338 birds, most of them in small home-lot flocks of six to 10 birds which were scavengers living off what refuse they could find rather than being fed a balanced diet. There were regular high losses due to such diseases as Newcastle and Pullorum. Egg production was extremely low and no records were kept which would enable the farmer to cull out the low-producing birds. Little or no housing was provided for the flocks.

At the end of 1960, there were a recorded 29,949 flocks which contained more than 50 birds, more than double the number existing when the program was launched. Actual total poultry population had risen only to 13,627,384 during the same period, an increase of less than 50%. The increase, then, came primarily in the larger, better managed flocks and not in the scavenger birds which are still common but are decreasing in number annually. Perhaps of even greater importance, the losses to the common poultry diseases have sharply decreased, and is almost completely non-existent except in isolated areas of

the country. Better feeding, housing and general management methods have been taught the Korean farmers by the Extension agents in each county through numerous farm visits, small group meetings and result demonstrations. The Veterinary Research laboratory at Anyang has developed successful inoculations for the common diseases and these methods are being used in all parts of the country. The Laboratory, using USOM-supplied equipment and the skills of returned participants, is now making and distributing to farmers all the vaccines and inoculants needed to control Korea's livestock and poultry diseases.

As one direct result of this progress, United Nations Armed forces and USOM families now have a source of both eggs and poultry at reasonable prices and do not have to depend upon supplies shipped into Korea as was done during the earlier years of the aid program. Contracts between Eighth Army Headquarters and Korean farmers now provide for the supplying of over 300,000 dollars worth of poultry annually and this contract was successfully met by the Korean farmers in 1960, has been renewed for 1961. It provides a cheaper food of guaranteed purity to the American community in Korea, an added source of income for the Korean farmer, and a valuable amount of foreign exchange to the Korean government.

\*\*VIETNAM

The most spectacular phase of the livestock development program in Viet-Nam is the phenomenal increase in the number of pigs of the improved breeds. This is definitely illustrated by the fact that as recently as 1956 approximately 40,000 hogs were imported yearly from Cambodia to supply the pork requirements of Saigon City, whereas in 1960 66,400 hogs were exported to Hong Kong along with 126 tons of lard and 15 tons of frozen pork and, 3,300 breeding pigs to Burma. This represents a dollar value of \$2,408,120 which places pork and its by-products as the third place currency earner for Viet-Nam, preceded only by rice and rubber.

The stimulus for this interest in pig raising was supplied by the importation of purebred Yorkshire and Berkshire breeding stock and the rapid growth rates obtained by crossing with local hogs. There is hardly a village in Free Viet-Nam where one cannot find results of the infiltration or fusion of improved strains of hogs.

\*\*BRAZIL

A herd improvement demonstration project, based on artificial insemination was started in October, 1958. At the annual Livestock Show last September at Pelotas, Rio Grande do Sul, nine progeny resulting from frozen semen imported from the U.S. in the Jersey class took four first premiums, two seconds and three thirds out of a total of 32 ribbons awarded in 14 classes. Four of these animals took championships. In the Holstein show, nine progeny developed

through the project took two firsts, two seconds, two thirds, and one fifth out of 71 ribbons awarded in 20 classes. Six championships were won among the nine Holsteins. The high placing of these young animals in the Pelotas show which is of national importance, was somewhat surprising to ICA technicians since the animals were selected on the basis of production and had no reputation as show bulls. The popularity and prestige of the herd improvement project was greatly increased as a result of this show.

#### \*\*SUDAN

With the introduction of an egg cooler and two 2500-egg electrically operated incubators and the assistance of a U.S. poultry advisor the American aid program has materially benefited the development of the poultry program in Sudan. Previously, small oil burning incubators and broody hens were the only incubation facilities in that country. Because of extremes in temperatures and humidity, the small incubators with limited controls always gave unsatisfactory results. For example, two hatches of baby chicks immediately following the installation of the new equipment averaged 74% of all eggs set as compared to only 39 and 48% respectively for the preceding two-year settings in the small natural draft incubators used previously. Three additional hatches with the new equipment gave 76.4, 75.0, and 76.3 percent respectively of all eggs set. In one month from January 3 to February 1 of 1960 a total of 5933 chicks were hatched as compared to 2555 chicks hatched during the entire preceding two-year period with small incubators and broody hens. Breeding flocks for producing hatching eggs are now increasing in size, and an excellent start has been made toward a going and worthwhile poultry program.

#### \*\*CEYLON

In July, 1958, the ICA/sponsored agricultural work between the University of Ceylon and the Texas A & M College started a poultry production project which held promise for quick results to the University and to the public.

Hatching eggs from four strains of White Leghorns were imported from the U.S. and used as the basis for the breeding program. The four lines are kept pure from the top selections while the balance of the birds, after culling, are used for the production of incrosses that sold to the public for commercial egg production. The popularity of the project is indicated by the response of the public to a small classified advertisement when a few of the first surplus birds were offered for sale on Sept. 6, 1960. Although that notice appeared only one time, orders totalled over 11,500.

The University also developed a broiler project by importing eggs for improving breeding stock and putting on a full feeding program. The first fryers to reach the market found a line-up of buyers waiting for them.

A Ceylon Poultry Breeding Association was organized and it has been very active in promotion work and in servicing its members with good feed

rations. One company that was selling only a few tons of poultry feed per month now runs day and night shifts in their large mixing plants.

The poultry project served two very important functions. First, it helped develop communication between the producers and the University. The first short course of any kind ever held by the University was for poultry producers in 1959. Now there are constant visitors and correspondence. Secondly, the poultry project demonstrated how the University could serve the daily problems of management through the practical application of knowledge rather than to consider those problems as only academic questions.

Ceylon imported 34 million eggs in 1959. Local production can eliminate much of this, but per capita consumption is rising which is more important to those whose diet needs improvement.

#### \*\*INDIA

Poultry raising in India is receiving a boost as the result of successful feeding trials at the Nagpur Veterinary College in Maharashtra State. The tests have established alternatives for scarce and costly cereal grains now being consumed by chickens.

This ends the centuries-old problem that handicapped progress of poultry production in this country. Results of these experiments will utilize as poultry feedstuff some of the products now used as fertilizers or wasted. It will also mean more cereals for human use.

Researchers involved include R. T. Desai of the college staff (now an ICA participant at Kansas State University), N. D. Bhave, poultry farm manager and the U.S. Technical Cooperation Mission poultry specialist. Four electric battery chick brooders and chickens from the Kansas State University were used in the research.

Poultry feedstuff resulting from the Nagpur trials are ground nut oil cake (residue remaining after removing oil for human use), rice polishings and wheat bran, animal proteins such as fish, blood and meat meal (from dead or fallen animals), liver residue, molasses and molasses yeast sludge, tarota greens, corn gluten meal, damaged grain, tapioca, copra and penicillin mycelia waste.

#### \*\*ISRAEL

A milk cooling and storage tank designed by a U.S. livestock dairy advisor has resulted in a reduction of from 100% to 300% in the bacteria count of milk at a plant at Beit Herut. The results have been so impressive that five new units are presently being built and twenty more collecting stations in Israel are seriously considering the installation of such cooling and storage tanks together with the necessary remodelling of existing buildings for housing the units. There are about 275 milk collecting stations

in Israel and it is expected that one-third of these will change to the system within a year. This will constitute a substantial improvement in sanitary processing methods of milk for this country.

\*\*LIBYA

The following statistics portray some of the major achievements made in the Livestock Improvement program since its inception in 1953.

38 breeding centers and 4 veterinary centers have been established.

70 percent of the livestock breeding improvement and parasite control has been completed.

70 livestock watering facilities have been improved and hundreds of cisterns rehabilitated to provide stock water during the long dry seasons.

700 hectares of forage plots have been established.

41 dipping vats have been constructed, with annual average of 300,000 sheep and goats being dipped, and 1,500 camels sprayed or dipped.

2 flock demonstrations and 2 poultry pilot demonstrations have been established.

27 Libyans have been trained in livestock improvement activities.

1 wool washing plant is being constructed.

\*\*PHILIPPINES

Eight pesos first invested in one Native Mongrel weanling pig in 1957 started a swine project that grossed Mr. & Mrs. Calixto Alvarado of Kamansi, Ampuan, Cotabato ₱1,041.95 during the period from January to November of 1960.

Mr. Calixto Alvarado, 33-year-old driver-mechanic, left Umingan, Pangasinan in 1955 leaving behind his wrenches and sailed for Cotabato with his wife to try their luck in farming.

Now, they are successful and the Alvarados own a 5-hectare farm and have earned the distinction among fellow-farmers as model swine producers. Breeding and feeding hogs was a long way from tightening bolts and timing jeep engines. It required hard work, persistence, and patience for the young couple. After two years of rice and corn farming, Mr. Alvarado was able to save enough money to venture into poultry raising. In 1957, he acquired 50 New Hampshire chicks. This project lasted for one month. Coccidiosis wiped out the initial stock and the ₱180.00 invested. But this was not the end for the Alvarados.

In the same year Mrs. Alvarado sold one "native" weanling pig at ₱34.00. Out of this amount she invested ₱16.00 in a selected improved breeding gilt which she fondly named "Ebiang". When Ebiang reached the age for breeding, a pure bred boar was in the vicinity which sired her five healthy "Mestizas" (4 females and 1 male). The male pig was given as a service fee for the services of the boar.

In 1958, the four healthy "upgrade" gilts graced the Alvarado farm. Having heard of the technical assistance rendered by the Bureau of Agricultural Extension, Mr. Alvarado sought the help of the Agricultural Extension Agriculturist. This meeting led Mr. Alvarado to buy a pure-bred Duroc-Jersey boar from Upi. This boar and the four good mestizas from Ebiang was the beginning of a profitable swine project. The Alvarados specialized in the raising of weanling pigs which were sold to neighboring farms.

In 1959 the Alvarados realized a net gain of ₱41.45 from the project, including ₱656.50 as expenses for feeds and veterinary medicines. From January to November 1960, the total sales amounted to ₱1,098.00 with total expenses (medicines and feeds purchased) of ₱362.85, leaving a net gain of ₱735.15. Aside from servicing the sows on Mr. Alvarado's farm, the boar bought from Upi, Cotabato, is earning his keep from his services to the sows of neighboring hog-raisers.

Presently, the Alvarados' Swine Project has eight sows which are due to farrow in December. There are seven gilts for breeding, two boars and some forty weanlings ready for sale.

## WATER RESOURCES AND AGRICULTURAL ENGINEERING

Recognizing the vital importance of the use and control of water in agriculture, particularly in the many semi-arid and arid countries being assisted by the ICA, we continue a strong technical assistance program to help other countries develop their own organizations and basic laws relating to the appropriate control and use of water. The assistance may take many forms. In Pakistan, a maximum of four hydrologists and geologists have assisted the Government of West Pakistan to assess quantity and quality of the groundwater in the Punjab and to develop and train an adequate staff of specialists for a soil and water chemistry laboratory; for land classification; and for surface and groundwater exploration. In Ceylon an integrated group of specialists are assisting the Government to conduct a planning investigation of the Mahaweli Ganga (river) basin, with a view to achieving suitable development for agriculture and including hydroelectric power. A single water resource advisor in Taiwan assists the specialists of JCRR in developing a more adequate approach to irrigation including the problems of organization and appropriate "self" financing. An important aspect of our technical assistance in this field is the conduct of regional seminars in Irrigation. A seminar in Irrigation for the countries of the Far East was held May 1 - 12, 1961, in Taiwan. An irrigation engineer consultant has visited Latin America during this fiscal year 1961 to assist those countries to develop plans for a regional irrigation seminar to be held in Panama in February 1962. Plans are being formulated for a regional irrigation seminar in the NESAs region. As the underdeveloped countries establish agricultural engineering and water resources administration organizations, and as their own people are trained to provide leadership in such work, a better stability will be created in the agricultural economics of these countries.

Some typical examples are:

### \*\* Ecuador...

In most of the dry zones of the coastal area of Ecuador, deep wells for livestock watering, irrigation, and human consumption are not feasible or practical due to the high salt content of the subterranean water. These coastal areas have a six-month rainy season, followed by six months of complete drought. For these reasons, the most practical and economical source of water for livestock and human consumption is the impoundment of surface runoff water in man-made ponds.

A very small scale pilot trial was made on two privately owned farms in the peninsula area west of Guayaquil in early 1958. In 1959 due to the success of the original pilot ponds, a larger dam was constructed in the same area. A number of demonstration projects were initiated in 1960 due to the tremendous interest aroused by this new system for providing water during the dry season.

Nine reservoirs with a capacity for 114,400,000 gallons were constructed for private farm owners in 1960. All of these reservoirs were not

constructed in the dry peninsula area, however. Three of the larger ones were built in the wet, humid area and are to be used for supplemental irrigation of coffee during the dry season. In 1959 it was shown in this humid area that supplemental irrigation raised the production of coffee by approximately 100%.

The 1960 dry season lasted an unusual nine months. During this extreme drought, a survey showed that 50,000 to 80,000 cattle perished from lack of water in the dry peninsula area. Had all the nine reservoirs been constructed in that area, the 114,400,000 gallons would have watered an estimated 71,000 head of cattle for six months.

Due to the outstanding results of the farm pond construction program in the peninsula area during the past three years, many new locations are now being surveyed by the engineering department of the Mechanization Project of the Interamerican Cooperative Service for Agriculture (SCIA) for construction in 1961. These demonstrations have shown farm operators that the farm pond is the answer to an economic and efficient water supply for stock and human consumption in these dry areas.

\*\* Libya...

Since scarcity of water has been a major problem, a groundwater investigation project was started in 1952 as a joint government effort. In the past two years 112 test wells were drilled, several hundred wells have been inventoried and logs developed for 200 wells in the regions of Cyrenaica and Fezzan. Over 600 water samples were analyzed. A province well-drilling section is now in the advanced stage of training and the unit has been turned over to the Cyrenaica Nazarate of Agriculture.

To reduce water losses from leakage and evaporation of irrigation systems, a demonstrational training program on canal lining was started two years ago in Tripolitania. To-date, more than two-thirds of the objective of 100,000 meters for Libya has been achieved, with 67,000 meters lined, for the benefit of 647 farms on 1,017 hectares. An increase of up to 60 percent in water delivery has been noted. In addition, 259 reservoirs have been constructed or renovated with a capacity of 7,400 cubic meters. Rehabilitation of 60 springs has increased water flow 75 to 100 percent.

To demonstrate that run-off water from hilly areas could be harnessed and spread over broad areas, the Soil and Surface Water Conservation project was initiated by construction of water-spreading dikes in the Sirte area of Tripolitania in 1954. Nearly 20,000 meters of dikes and 201,755 meters of terraces have been constructed, improving thousands of hectares of crop and range land. Up to 300 percent increase in crop production has been noted on land behind dikes. This is a self-help project, with farmers preparing sites for construction and furnishing labor, land and gravel. The Libyan-American Joint Service provides other materials and technical advice. In this category, five irrigation and flood-control dams have been constructed and over 100

Libyans have been trained.

\*\* Vietnam...

In the sun-parched valley of Ninh Hoa in Central Vietnam, a stream of water makes the difference between a hungry soil and a prosperous land blanketed with lush paddies. Water also means two larger rice crops instead of one - or none at all.

One day, the people of 26 villages in the Ninh Hoa Valley decided to fight the parching drought. They pooled resources and labor on an irrigation project which would make the once-hungry area at least food sufficient within two years.

The American Aid Mission in Saigon found the scheme economically worthy and agreed to support the cost of building material for a small dam and gate at the entrance of the irrigation canal.

Early one morning 10,000 young men and women in black working clothes moved with banners, flags, shovels, crowbars and picks to the barren site of the new water control system. Plans had been prepared for a canal three kilometers long and three meters wide which would bring water from an existing waterway in Tan Lam. The survey indicated that the new canal would provide a more even distribution of water to farm lands in that region, and also serve the dry fields of the neighboring village of Tan Minh.

Some of the girls did the cooking, while others formed a chain passing and emptying small woven baskets of excavated earth. The men, armed with crude but efficient tools, attacked the reddish clay, breaking out chunks of ochre-colored, almost rock-hard laterite with iron bars, timing their strokes to the rhythm of folk songs. Soon, the canal site was like a moving black snake made of 10,000 men and women working and singing in a gay mood.

In less than three days they removed 15,000 cubic meters of earth and completed the Tan Minh canal. After its completion, everything in the Ninh Hoa Valley became green again; farmers plowed 350 additional hectares of two-crop paddies while fifty other hectares had sufficient water to be cultivated all year round. Just a little stream of water helped to produce 1,000 tons of rice, corn, beans and tobacco for more than 3,000 people. For most of them fat years of sewing-machine and bicycle prosperity were ahead.

In Vietnam - as in other tropical countries of Asia - control of water for drainage and irrigation means a hundred percent difference in the output of the land. In some provinces along the coast, water and irrigation have multiplied by three the former meager one-ton per hectare yield. To solve the problem of water control, rural engineers from Vietnam's Ministry of Agriculture and hydraulic engineers from the Department of Public Works are working with the American Aid Mission on 36 projects. These diversified water control systems are working in twenty provinces. In the Thua Thien province there has been 126 village systems near the old city of Hue, while in other

provinces individual systems were realized for the benefit of one or two villages. Everywhere, the pattern of work is the same: the villages contribute the labor, the Vietnamese Government services of rural engineers and American aid technical assistance and construction costs.

Vietnam is a flat land with erratic rivers.

The most valuable gift that nature has offered to tropical countries of Asia is an abundant supply of rain water. Vietnam - as other countries of Southeast Asia - does not fundamentally lack water for agriculture but the challenge is to make a beneficial use of it. The solution: a comprehensive program of water control. Control of water resources for farming includes irrigation, surface and sub-surface drainage, water storage, protection of farm lands against erosion, tidal water, brackish and flood waters.

Weather has given Vietnam two seasons as distinct as black and white: one dry - one rainy.

During the 150 days of the wet season (from May to October) Vietnam receives plenty of rain - an annual average of two meters. Practically no rain at all falls during the six other Sahara-dry months. The results are obvious: rice cultivation occupies the soaked land only six months of the monsoon while the land parched like the skin of an old elephant, remains untilled and unproductive for the rest of the year.

In many areas, water control makes possible a second rice crop or gives the farmer a choice of growing two additional cash crops during the dry seasons. On irrigated lands, Vietnamese farmers have recently planted fiber plants, vegetables, soja-beans, corn, tobacco, chewing sugar cane, and livestock feeds. The income of the Nguyen's Trinh's and Van's has been multiplied by two and is no longer dangerously dependent on a single crop. Gradual elimination of the economically unbalanced one-crop system and protection of farmers against failure of it are the most immediate benefits brought to Vietnam by water control.

The solution of water control is not only irrigation. Vietnam's agriculture suffers also from too heavy rainfall. Surplus water transforming certain areas into lakes must be quickly drained by means of canals and outlets. Drainage - as it is the case in the newly developed Caisan and Plan of Reeds areas - washes out the harmful excess of chemicals in the land, reduces its natural acidity and improves its fertility.

In the western provinces of the lush Mekong delta, rice lands are inundated during the six months of the rainy season. During the six following months, brackish water coming from the nine mouths of the mighty Mekong and other rivers moves 100 miles into the flat country as a deadly green wave. In some swampy regions closer to the coast, rivers flow alternatively into two opposite directions: towards the sea at low tide; from the shore inland at high tide. Controlling the flow of these erratic waterways by ways of dams, dikes and gates is one of the agricultural projects undertaken jointly by

Vietnamese and American engineers. One of these projects is located in the fertile province of Soc Trang, (also called Ba Xuyen) at 160 kilometers southwest of Saigon. This major, multiyears undertaking will protect 51,000 hectares from salt water intrusion and provide valuable drainage.

The problems faced by rural engineers are slightly different in the thickly populated provinces of Central Vietnam where the land is drier and every source of liquid is precious. In addition to wells, irrigation is provided by small earth dams and by an intricate system of canals running in the green valleys distributing the fast running water to each one of the small, usually not larger than one hectare, fields. In other places, diesel pumps - carrying the American aid label - fill narrow irrigation ditches with water pumped from clear rivers flowing from the dark mountains of Truongson Range on a bed of gold-hued sand. In other places, the villagers quench the thirst of their fields with water lifted by big norias turning like ferry wheels along the steep banks of rivers.

Whatever the system used the great task is to develop more of the water resources for the agriculture of Vietnam.

\*\* India ...

Shivasiva Rao, a retired forestry officer, is now recognized as one of the most successful farmers in Mysore State, Southern India. Recently he harvested a splendid crop of rice, vegetables, cotton and grain sorghum on his forty-acre farm. A year ago Rao's farming was a failure.

Today, Rao is an example of the success of border strip irrigation demonstrated to him by the Water Use Advisor of the U. S. Technical Cooperation Mission. The Advisor is teaching farmers how to make effective use of irrigation water, introducing better planting methods and better seed.

After his initial failure, Rao left his farm and settled in a nearby town. Later, he went back with a determination to salvage it. He sought advice from the Soil Conservation Research Office at Bellary. A plan was outlined for him by the Technical Advisor and two of the local Indian agricultural officers with whom the Advisor worked.

Rao's lands were leveled in contour border strips for irrigation. A system of surface drainage was worked out. Twelve acres of saline lowlands were reclaimed to good production and eight structural drops were constructed to prevent erosion. Within a short time Rao succeeded as a farmer and is now an outstanding leader of his community and a living example of success through hard work, with scientific guidance.

\*\* Haiti ...

Dubedon is not even indicated on the map of Haiti - it is situated in the most arid parts of the country not too many miles from the major city of Gonaives.

While returning from a field trip one hot day in late 1959, two American International Cooperation Administration people and two Haitian agronomes made a rest stop in this area. During the stop the conversation of the group was concerned with the utter desolation of the area, the wonderment of how people could survive in such a desert, and some of the ancient history of the country. It was not long before the customary group of peasants collected around, just looking at this strange group of travelers. On questioning them, it was learned that an old irrigation system for supplying water to the desert plain had existed in colonial times. One hundred and fifty years of floods, erosion, hurricanes, and no maintenance had almost completely erased all vestiges of a water distribution system. The peasant people told of a small river from the mountains which disappeared before it reached their area. Taking time to investigate further it was discovered that the small river existed and that it did sink into the gravels and apparently continued to the sea (a distance of about 20 miles) through the underground gravels. Further investigation also revealed that numerous streams and springs from the mountains met the same fate and that two investigatory wells had been drilled in the plain during some long forgotten geological survey. The wells, having served their purpose for investigation, had then been abandoned.

The idea of developing the vast ground water resource by pumping from wells onto the desert area was discussed. To accommodate the needs of the local people living in the Dubedon area it appeared to be a simple matter to divert the river water upstream from the influent seepage area and transport the water to their habitation area through a small canal. As the idea was discussed further the peasants seemed to sense the import of the discussions. Their response was one of high excitement and hope. Suddenly, after long years of forgottenness, some strangers had come from out of nowhere and shown an interest in their personal welfare.

For purposes of brevity, it is necessary to skip over many interesting details of this first contact. In the ensuing months, however, an agronome was assigned to the project of martialing the peasants into work groups, and generating the hopes and enthusiasm of the people to a high pitch. The American engineer made up simple designs and materials estimates for a rock masonry gravity-type buttress dam, adhering to simple physical principles for assuring the proper strength and protection of the diversion works. In a cooperative effort, the people carried rocks from the nearby hills on their heads, sand and lime were gathered from far places and carried on the backs of burros, 104 sacks of cement were supplied by ICA. The work groups consisted of old men, boys and women. With periodic trouble - shooting visits and some routine inspections by the Point Four team of one agronome and one U. S. engineer the construction was completed in just four months time.

Where previously the people had risked everything to time the planting of their small odd shaped plots of ground to fit the short rainy season of that area; they are now the proud owners of an irrigation system covering some 360 acres of land and providing subsistence for approximately 100 families. This indeed is a very small "drop in the bucket" improvement in production in the country and perhaps does not even reflect as much as \$1.00 in the gross national product. However, there is one outstanding fact, that an immeasurable amount of American good will and democracy was peddled to these 100 families for the mere price of 104 sacks of cement and a few weeks of time and attention from American ICA specialists. But even considering the import of technical know-how it was proven in this project that successful completion required about 10% civil engineering and about 90% human engineering.

The last visit to this area revealed the first entirely successful red bean harvest, a good crop of sweet potatoes, and corn was seen growing in the fields. The people recognize the two Americans and their esteem and thanks were manifested by giving an outdoor party in their honor last summer. The party was complete with program ceremony, dancing, singing, and the fiesta of barbecued goat, boiled plantain, rice, gravy, and rum.

Dubedon developed as a grass roots self-help project in which interested Haitians assisted by responsive American advisors accomplished a successful project which enjoys acceptance from all concerned.

\*\* Ecuador...

To meet the demand for well-trained heavy equipment operators, USOM initiated training courses in which 48 persons received certificates in 1960. Candidates were selected by an impartial system of mechanical aptitude and coordination tests. Final selection was made by representatives of all makes of heavy equipment; no names, only numbers, were used on the records. For the last course, there were 220 applicants for 12 positions. Each course runs for eight weeks and includes practice and lectures during the day and movies, lectures and discussions at night. Each student pays a small fee, which covers only a fraction of the cost. Additional expenses are paid by the land-owner upon whose property the course is held. The farm operator pays for such projects as earth dam construction, land clearing, farm roads, etc., that have been designed by SCIA engineers and discussed with the farm operator prior to the course. In this way the farm operator benefits from well-designed and well-executed projects at a reduced cost; and the country gains by the increased number of qualified heavy equipment operators.

One of the major USOM activities in Ecuador's coastal area is construction of access roads for private land owners. In many areas of new land development, farm planning and development have far surpassed construction of a primary road system. Therefore, many farms have come into production long before primary roads are built. During 1960, 300 kilometers of access roads and internal farm roads were constructed to bring a calculated 30,000 acres into the economic picture for export crops.

\*\* Taiwan...

Three new farm tools have been developed by the experimental farm shop in Taichung, Taiwan, to help farmers there improve their farming. They are the paddy weeder, the power thresher and the power cutter. These tools are labor saving and economical and well fitted to Taiwan's farming system. Other machines such as the sorghum thresher, sweet potato and peanut digger and several others are being designed by the shop. The experimental farm shop was set up in January 1960 with assistance by the Joint Commission for the Rural Reconstruction and the cooperation of ICA. It is sending its models to the Provincial Farmers Association and the Provincial Department of Agriculture and Forestry for testing before large scale manufacturing by local firms.

\*\* Bolivia...

The home-made wooden plow has been replaced by a simple steel plow on hundreds of farms throughout Bolivia in 1960. A program was inaugurated by the Engineering and Extension divisions of the Servicio Agrícola Interamericano, with strong support from the President of Bolivia to demonstrate this plow in as many remote areas as possible. Over 3,000 steel plows, valued at \$5.40 each, had been imported by ICA. After 250 demonstrations had been given in seven states and attended by nearly 7,000 people, 2,593 steel plows were sold within 100 days. These plows are easier to pull, plow deeper and make the day's work a little more profitable for Bolivian farmers, who get small returns for their labor. A local establishment is considering manufacturing a similar plow to bring improved methods to even a greater number of small Bolivian farms.

\*\* Turkey...

Inexpensive horse-drawn scrapers, fresnos and farm tractor-drawn land shaping equipment, adapted for local use by ICA and Turkish technicians, are becoming increasingly popular in Turkey.

Working with their Turkish counterparts, three ICA technicians drew up plans and specifications for both animal and small tractor-drawn equipment. This type of equipment is widely and successfully used, especially to prepare small, irregular shaped tracts of land for irrigation.

In addition, a number of 4-7 cubic yard scrapers, to be drawn with heavy tractors, have been imported by the Turkish Government since 1953. This equipment has been extensively used for heavy earth moving jobs.

Arrangements were made with a machine shop at Izmir to manufacture 100 sets of equipment under ICA financial assistance. Each set included three horse-drawn fresno-type scrapers, a tractor-drawn Miskin-type farm scraper, a "V" type ditcher, a buck scraper, a wooden land float, and smaller items.

Sixty Turkish county agents were invited to Izmir to a short course to learn how the equipment is used. Bulletins were printed in Turkish giving step-by-step instructions.

Since the project began in 1958, most of the equipment has remained in the ownership of the Toprak Su (soil and water conservation) Division of the Turkish Ministry of Agriculture. It has been used to demonstrate improved land preparation practices on individual farms.

However, as farmers have become interested they have purchased some of the equipment. The money received from such sales has been put into a revolving fund to finance manufacture of more equipment to be used primarily for demonstration purposes.

As soon as the demand is heavy enough, plans and specifications will be turned over to the supply organization of the Ministry of Agriculture so the equipment can be manufactured on a mass basis.

The cost of manufacturing horse-drawn land shaping equipment in Turkey has been modest. It has cost the Turkish equivalent of about \$265.00 to make a big two-meter-wide fresno-type scraper and \$200.00 to manufacture a one-meter-wide fresno.

## FORESTRY

Forest resources affect the national economy in two important ways. They provide a renewable source of raw material suitable for a wide variety of products essential for domestic use and valuable in foreign commerce; at the same time they serve to protect the national agricultural land base through their action in water regulation, soil stabilization, and climate amelioration. Forestry advisors have been assigned to 21 countries to assist in developing the productive capacity of their forests, expanding their beneficial use, and restoring or improving their protective capacity. Individual projects cover nearly every phase of forestry including surveys, management, utilization, afforestation, research, and technical training.

Some examples of Technical Cooperation in forestry programs are:

\*\* Liberia: Forestry development began as a joint effort between the Liberian and U.S. Government with the enactment of the Forest and Wildlife Conservation Act in 1953. This resulted in the establishment of the Bureau of Forest and Wildlife Conservation in the Department of Agriculture and Commerce as well as a National Forest System and the Liberian Forest Service. This strong governmental support combined with in-service training of a forest service staff, thence the establishment of the School of Forestry at the University of Liberia, recognition of the profession of forestry, industrial promotion of the economic value of the resource, forest management and modern utilization practices have resulted in considerable progress. From the beginning strong emphasis was placed upon the important role that the timber industry would play in forest development.

The initial goal for setting aside 4 million acres of National Forest Reserve, 17% of Liberia's land area, has been nearly met with 3.5 million acres proclaimed and delineated. Nearly 800 miles of lines have been run by Liberian crews to make this delineation.

The Forest Service now employs 96 people including nine professional foresters. Nine sub-professional people have been given on-the-job training including six who have been to the U.S. and Puerto Rico for training. They are beginning to work on forest utilization and management with nine industrial timber groups beginning extraction on 1.5 million acres of forest land. Approved plans are required prior to extraction of Forest Reserve timber.

Timber production has grown from 2,350,000 board feet in 1956 to more than 10 million board feet in 1960. Ten sawmills and one logging company are exporting timber to Europe for veneer manufacture. Two other firms are commencing log export and lumber operations.

Leadership by the U.S. Forestry Advisor was instrumental in establishing a School of Forestry at the University of Liberia which has graduated 15 foresters. Now staffed by FAO of the United Nations this

institution is largely responsible for developing professional forestry personnel to give increasing strength to the Liberian Forest Service. It is the only institution with academic rating granting a professional degree in forestry in West Africa.

\*\* Philippines: The Forest Products Research Institute at Los Banos, Laguna, was established in 1952 as part of the Philippine-American Technical Cooperation Program to obtain more efficient and complete utilization of Philippine forests. It had been estimated that about 75% of the wood per hectare was lost in harvesting and processing of logs into finished products.

With scientific equipment and research facilities supplied mainly by the National Economic Council of the Philippines and ICA, the Institute operates today on a formalized research program that includes nearly 100 projects.

In view of the paper shortage in the country, the Institute is at present experimenting on the production of paper from Philippine woods, bamboos and other sources, especially waste wood and species of little use for other purposes. Other research efforts are to help Filipino plywood manufacturers find a solution to industry problems and product improvement; provide data on the chemical composition of 3,000 species of Philippine woods, and to determine their best uses; tests on the strength of woods, durability of treated and untreated wood, preservative treatment, insect and fungi damage and control methods. The Institute's usefulness to the nation depends upon the extent to which its work results in improvements. Its findings are made known through publications, correspondence, consultations, plant visits and all other practical ways. The staff includes chemical, civil, electrical, and mechanical engineers, botanists, foresters, entomologists, pathologists, skilled mechanics, woodworkers and laborers.

Fifteen research technicians and leaders have been sent to the U.S. for special training. Seventeen others have also been trained abroad under the sponsorship of the United Nations, the Colombo Plan, the Rockefeller Foundation and other international organizations. Assisting in the research program are three product specialists from the U.N. and an ICA forestry advisor.

Lumber is the nation's third major export item. Philippine hardwood is well known internationally and being in great demand it commands top prices in the world's market. Through this research program improved techniques are being found to eliminate wasteful harvesting and processing practices, and new and better uses are being developed for forest products.

\*\* Libya: In 1952 the Libyan-American Forestry program was started to control sand dune encroachment on many food-producing farmlands; to provide much needed fuel wood and charcoal for local use, and to furnish material for making domestic furniture and the building industries. A plan was drawn up to restore Libya's forest reserves and to introduce

forestry management practices essential to the conservation of the soil and water resources of the country.

Training schools were established for forest guards and nursery workers. Others were sent to neighboring countries to learn from the experience of others. Around 20 forest guards are being trained annually in Cyrenaica and Tripolitania and forestry officials are receiving training abroad.

Agricultural Extension cooperates with Forestry by giving demonstrations on the individual planting of trees on a large scale. Motion pictures, posters, leaflets and meetings are used to inform workers on the planting and care of tree seedlings.

Libyan nurseries now have an annual capacity of 8,500,000 seedlings. Afforestation of government lands, in the plains and mountain areas to help control erosion and floods, has been on a planting rate of 3,750 acres per year. Libyan technicians have become proficient in nursery work, and the techniques of sand dune fixation by "dissing", a method of protecting young seedlings with vegetation until they take root. They also train agricultural officials from neighboring countries in the "dissing" technique. Already, over 5 million trees have been planted on afforestation projects, 3.7 million trees on community and private forests, 1.2 million trees planted for windbreaks and shelter belts, 152,000 for roadside protection and over 54,000 trees planted in recreation areas. In addition, approximately 50,000 acres of sand dunes have been fixed by planting and "dissing".

\*\* Spain: In a bleak, barren province of north-central Spain, a planting machine of American design has made large-scale reforestation possible. It has done this by reducing to one-sixth the man hours needed to plant an acre of ground. The machine is simple enough. A lister plow that penetrates twelve inches down is attached to a heavy iron frame. Metal wheels support it in front and rubber ones in back. These rear ones are set close together. As a yoke of oxen pulls the contrivance through the ground a planter, sitting astride and adding his weight, slips pine seedlings one by one into the hole opened by the plow. The rear wheels nearly pack the dirt down around the roots. Four other men keep the planter supplied with seedlings, guide the oxen, and make sure that the wheels have done their job of tamping well.

Reforestation in the province of Teruel is a race against drought and shortage of manpower. Rains come rarely; and when they do come, the planting crews must work fast to take advantage of the humidity in the soil. In a few days the ground will be dry again; and a pine seedling planted in dry soil is a dead one. With fifty machines, the Forestry Brigade of Teruel can plant 188 acres a day whereas using the same crews armed only with mattocks, production would not pass 30. Survival of seedlings in Teruel is astonishingly high even though they are planted with bare roots.

Labor shortage in Teruel is a social problem. People are moving away from these cold uplands for a better life in the valleys and towns.

Reforestation can no longer depend upon abundant supply of work-hungry laborers. New, efficient methods are needed; and the humble planter is a symbol of the new spirit.

American funds are behind the Teruel program because it has used imagination and ingenuity to help solve the age-old problem of barren lands and poor people.

\*\* Korea: An important cornerstone in the economy of Korea is its timber. It is not only an essential building material, but also is fuel for fire that cooks a Korean's meals, heats his house, and turns the wheels of his smaller industries.

If allowed to go unwatched, unheeded, and unharnessed, water can do devastating things to the land that means so much to man. At this very moment accelerated erosion is taking place at a menacing rate on denuded forest lands of Korea. During each rainy season, vast amounts of sand, soil, silt, and rocks are washed into the streams and rivers, causing frequent floods and consequent damage to dikes, farmlands, roads and bridges. Forest erosion, therefore, poses a major threat to the agricultural and industrial growth of the country.

A handful of technicians of the Agriculture-Forestry Ministry have been combating nature, which, if properly controlled, could be man's best friend. Forest erosion control seemed to be an unending battle, until advanced techniques and aid material were introduced by American technicians.

Slope erosion control is the most important phase of the program introduced by the USOM soil conservationists to their Korean counterparts. This is accomplished through the application of strip seeding and spot seeding, of mixtures of strong-rooted, fast-growing grass and trees. These plants and trees aptly arrest the soil only a few months after seeding. In the past, the soil on the eroded slopes was stripped off in order to build expensive terraces and to plant trees, which required four to five years to grow enough to arrest the running soil. This new method will reduce the expense of such work by two-thirds. The USOM technicians also introduced foreign grass specimens entirely new to Korea, such as weeping love, ladino clover, rye grass, orchard grass, and bird food trefoil. These plants have strong roots, grow fast, and also have a high value as livestock and green manure.

Perhaps the most important thing to remember in connection with tree planting and forestation is that the protection of forests is a most urgent matter. The people of Korea must realize the vital role they play in the success of this program, which is greatly improving the national welfare and the future forestry policies of the ROK.

The greatest significance of these plants and trees is that very quickly they create watersheds, which reduce the burden of streams by absorbing rainwater and thereby preventing floods. It does no good to plant a tree, for instance, if it is soon to be cut down or destroyed.

A total of 964 technicians of the Ministry are working to save the Republic's forestlands from erosion, under the effective and enthusiastic assistance of USOM.

The development of a hybrid pine in Korea and the possibility of its value to the United States furnishes an example of the validity of referring to American technical efforts abroad as cooperation rather than assistance.

The new pine, a *Pinus rigida* (Pitch pine) x *Pinus taeda* (Loblolly pine) hybrid was developed by Dr. Sin Kyu Hyun at the Korean Institute of Forest Genetics at Suwan, where forestry research is being sponsored by ICA as a part of its forestry project. It was developed in an effort to find a superior conifer for large-scale production to meet Korea's critical needs.

Pitch pine had been introduced into Korea from the U.S. about 50 years ago. It proved to be very adaptable to the Korean climate, quite hardy, and not susceptible to local diseases or insects. However, it is comparatively slow growing, has a poor form, and its wood properties are not the highest. Loblolly pine, on the other hand, is a fast grower and produces an excellent quality of wood but, as a southern U.S. species, it does not survive in the Korean climate. The hybrid, which Dr. Hyun calls "*x Pinus rigitaeda*" was developed by fertilizing established trees of *Pinus rigida* in Korea with *Pinus taeda* pollen obtained in the U.S. The result gives every evidence of retaining the hardiness of *Pinus rigida* as well as the high yield, good form and excellent wood properties of *Pinus taeda*. On the basis of these indications, production of the hybrid has been greatly expanded using important quantities of pollen furnished under the ICA project.

U.S. Foresters were impressed by the vigorous growth of this hybrid and recognized that it could serve a valuable purpose in the United States. As a result, arrangements have been made to conduct comprehensive field tests in the United States. Dr. Hyun through USOM/Korea has furnished ICA/W with 500 grams of the hybrid seed. These will be used by the U.S. Forest Service in cooperation with the University of Illinois to carry on field tests in several locations in Illinois and possibly Iowa. If, as anticipated, these tests prove successful, it will have the effect of extending the range of Loblolly pine, one of our best conifers, into the northern areas of the United States.

### FISHERIES

Lack of animal protein is a major dietary deficiency for the peoples of Asia, Africa, and Latin America. In many of the countries, the development of fisheries, both marine and inland, has equal or greater potential than livestock or poultry to increase the available supply of animal protein. ICA presently has technical advisers in 12 countries to assist in fisheries projects concerned with inland fisheries development, rice paddy fish production, improved equipment and methods for off-shore and deep sea fishing, and the storage, processing and marketing of marine products.

An example of ICA project in fishery improvement:

\*\* Korea: In 1957 the Governments of Korea and the U.S. entered into a program aimed at developing fisheries products that would increase earnings of foreign exchange. Statistics showed that shrimp, which is a good export item, was being landed in various Korean ports mixed in with other fish catches but there was no concentrated shrimp fishery. These shrimp were sold on the local market for what they might bring or, in the case of the small ones, were dried for export or local sale.

As a result of fishing grounds development through an exploratory program which has established an assured supply, a processing, quality control and inspection program which has resulted in a high quality frozen packaged product, the U.S. Army Procurement Agency in Korea purchased 195,800 lbs. of frozen shrimp during 1960, with a dollar value of \$77,027.77. In addition to this, local club sales and exports raise the total foreign exchange income from this product to an estimated \$150,000 for 1960 in comparison to \$16,946 from dried shrimps in 1956.

### PARTICIPANT TRAINING

An almost unbelievable lack of trained personnel is a major hurdle to progress in most countries cooperating in the ICA program. It is a hurdle in nearly every agricultural project in the program. Consequently, most projects provide for training at least a few individuals. Many of them are sent to the U.S. for training, and increasing numbers are coming from newly independent countries.

As previously reported, over 12,000 agricultural participants have been trained in the U.S. The current travel rate, including those in the University to University contract program, is approximately 1,500. The primary objective of the training is to increase the technical and administrative proficiency of the individuals. The success of many projects depends significantly upon the effectiveness of the training.

Some of the participants spend one or more semesters in a U.S. college or university. All of them receive practical training with appropriate sections of the U.S. agricultural economy.

Along with the practical and scientific training is exposure to U.S. homes, families, communities, and farm organizations. They go home with a better understanding of the U.S., and most of them go home as better friends of the U.S. And the experience of U.S. citizens with the participants further enhances international understanding.

Some indication of the value of the participant training program is reflected in the following:

\*\*Korea.....

Chief Kim of the Bureau of Forestry, Extension Specialist Chung and Technical Programs Chief Kim are only three of the 131 Korean agricultural workers who have been sent to the United States or some other country by the U.S. - Korea technical cooperation program for technical studies and who have returned to Korea to put into effect the training they received. A recent study of the 131 shows that after returning to Korea, 72 continued in their former jobs but are doing their work more effectively; 22 have since been promoted to better positions, and 10 have taken non-government positions where they are using their new training. Only 3 of the 131 are making no use of the new skills they learned, and 3 others who are still in government are in lower positions than when they left Korea. This record of only six "failures" among 131 trainees is considered remarkable by the ICA Mission, which believes it is a mark not reached by any other country where ICA programs operate.

That these participants "learned so they may teach others" has been amply demonstrated. Throughout Korea schools were held in 1960 for farmers to show them how to change their bare, eroded hillsides into a profitable source of income. Fuelwood, nut and fruit trees and some commercial timbers were planted to hold the soil and to produce an economic crop. Grasses were planted too, to conserve the soil and to provide pastures for Korea's increasing livestock population. Behind all this activity are the Korean technicians who plan the training schools, train the extension workers and fieldmen instructors, and provide the teaching materials for use in the schools. Throughout Korea the knowledge gained through participant training is being put to work for the advancement of the agricultural economy and the welfare of the people.

\*\*Libya.....

In the past two years (FY 1958-60) a total of 589 Libyans received training in various fields of Agriculture and Water Resources program as follows:

On the job training. . . . .	250
Individual training. . . . .	60
Off shore training in neighboring countries. . .	25
*Participant training (T.C. Funds) . . . . .	72
Local group training . . . . .	182
Total	589

\* (Those who have received or are still in training in America, Cyprus or Beirut)

It is gratifying to report that the counterparts of American Technicians and recently appointed Project, and Co-project Leaders are capably cooperating and coordinating their activities toward reaching the overall objectives.

Moreover, Libyan Technicians are being called upon to assist some of the neighboring countries which have similar problems. During the past year several groups have visited Cyrenaica and Tripolitania to obtain first hand information on Libyan methods of Surface Water Conservation and fixation of sand dunes.

\*\*Turkey.....

Miss Selma Ogmen came to the United States for 11 months in 1953 for training in Home Economics. A graduate of Ankara University of Agriculture, she was considered to have exceptional potentialities even before she left Turkey. Arriving in the U.S. she enrolled at Oklahoma State University and completed 13 hours of academic credit in Freshman Home Economics. It appeared that she was a natural for Home Economics and she never missed an opportunity to observe, learn and collect material.

When Miss Ogmen returned to Turkey she was assigned to one of the small outlying Technical Schools for village children about junior high school level. Her work there so impressed the Mission that she was promoted to Supervisor of the Home Economics teachers in these schools. Here she was instrumental in changing the curriculum, making over departments and opening two new ones.

More recently she was moved up to Division Head of these technical schools, a position formerly held by men. Her responsibility in this position has been appreciably increased over the former requirements of the job. Miss Ogmen got this promotion through her direct associates. With the guidance of her U.S. advisors she prepared more literature than perhaps any other person in the Ministry, and her output has been so high that she can't help but be recognized.

Miss Ogmen's personality and ability, of course, was inherited and developed on her own, but her year in the United States has helped her immeasurably in her present progress.

\*\*Ghana.....

In November, 1960, Mr. Alfred Asem, a former ICA participant to the United States for a training program, was named National Extension Commissioner of Ghana. Prior to this he had been the principal Agricultural Officer for the Western Region. All regions had previously been organized and staff trained, awaiting the naming of the national leader. Following Mr. Asem's appointment, a move was undertaken to train subject matter specialists to support the field staff.

Participant training is playing an important role in the development of agriculture in Ghana. Six of the seven key agricultural positions in the country have been filled by former ICA participants who studied in the United States.

\*\*Tanganyika.....

A former ICA sponsored participant who recently completed a short course in Agricultural Extension and Education in the U.S. has been appointed head of the newly formed Faculty of Agriculture at Siriba Agricultural College at Maseno in Nyanza. He is Mr. Paul Thiongo Mirie, a graduate of Makakerere with a Bachelor of Science degree in Agriculture and followed by post graduate work in Animal Husbandry at Cambridge University. Prior to his promotion he worked as an Agricultural Officer for his government.

Comment by Trainees.....

"Agriculture is no longer a way of life for rural people. It is a business requiring new knowledge, skill, and planning. To increase our productivity to the fullest in the long run the country should not count on the "good old guard," but rather on the progressive young men who could do well as farmers but because of lack of training are year by year lost into positions where they do not even fit. 'Train the child the way he should grow and when he becomes old he would not depart from it.'"

--"An African participant from South of the Sahara"

\*\*Chile.....

"We are nearing the end of 1960, which had such disastrous consequences for the southern part of my country, where I live, that we were isolated for a long time from the rest of the world, and consequently, I was unfairly deprived of the pleasure of communicating with you and informing you that my visit to your country was one of the most interesting and unforgettable events in my life. Since our tour was so well organized, I think that I had an opportunity to become familiar with wide areas of American agriculture, obtain a very good idea of every aspect of American life, and appreciate the beauty of your nation. My visit gave me a unique opportunity to learn about your efficient farming and to become acquainted with the different classes of people who direct it; personally, I think that it will be of great importance in my private and [agricultural] cooperative activities. I have had an opportunity to give several talks to groups of farmers, clubs, cooperatives, and public welfare agencies. I wish to continue these talks next winter, for they have been very well received. Furthermore, some of my traveling companions and I have worked with our agricultural authorities and cooperatives and presented information on our observations, requesting that it be included in the Chilean agricultural program.

".....The foreign aid (following the earthquake) was very much appreciated, particularly that received from the United States, of which you can all be proud, for, through the assistance given by the United States and other sister nations, we were able to solve our food, transportation, and health problems since there were localities in which nothing was in operations. Now, through economic cooperation, the most essential services, such as health and school services, etc., and such public facilities as roads, railways, airports, ports, etc., are being rapidly re-established. There were times during the period following the earthquake when the southern provinces had no air, land, or ocean transportation facilities because of the total destruction of their means of access.

"We confidently hope that our effort to rebuild our region will transform it, in a very short time, into one of the most progressive and productive areas of the country."

-----An agricultural participant from Chile.

## **Appendix of Photographs**



## AGRICULTURAL EXTENSION

USOM agricultural extension technician, and Chilean technician José Jamet examine the seed content of a field of subterranean clover which was planted by their recommendation. This type of clover produces excellent dairy cattle forage and is also harvested to provide seed for additional crops. Seed is also sold to other farmers.

Class of extension workers taking in-service training in crop production receive instruction from American technician, Ray Wendel.



A U. S. Extension Advisor inspects potatoes for disease in Chulla Nam province of Korea and explains to Extension agents how to recognize the various diseases he found present.



## AGRICULTURAL RESEARCH

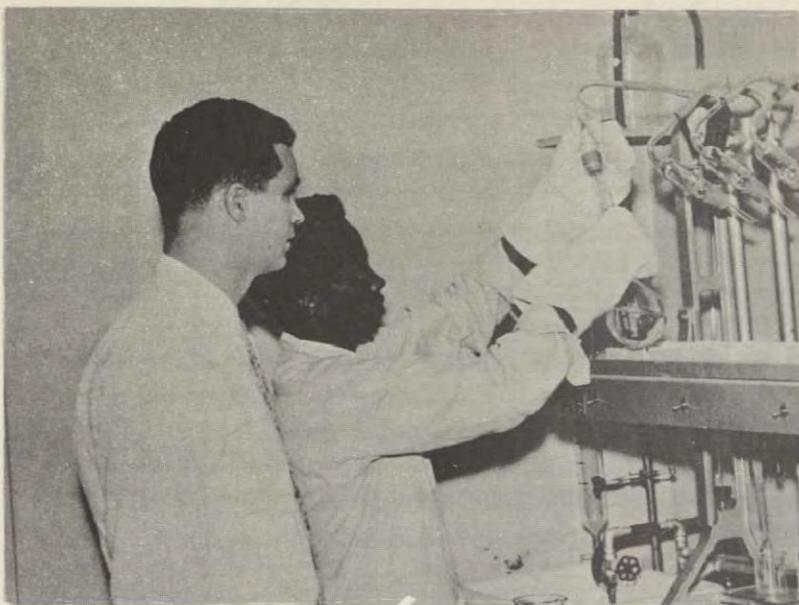
Experimental studies and demonstrations in the use of fertilizers were a part of the Agricultural Research Program at the Chillán Center. Pictured here is a demonstration of the use of fertilizers in a rice testing area.



Mr. Siregar, head of the Bogor Rice Institute, Indonesia, performs an emasculating experiment with a grain of rice. Emasculating is the taking by suction through a vacuum tube of the anthers from the spikelet, a portion of the rice grain.

Another experiment in determining the best planting time for sunflowers is conducted at the Agricultural Research Center in Chillán. The recommendations derived from these experiments are then published and disseminated to Chilean farmers through the mediums of agricultural bulletins, radio, newspapers, visits to farms by agricultural extension personnel, and by demonstrations to farmers who visit the Center.





## AGRICULTURAL EDUCATION

A well equipped soils laboratory at the Jimma Agricultural Technical School provides training for students in the analysis of the soils of Ethiopia. At the same time, the laboratory provides valuable information on soil fertility to the research staff at the school and to farmers in the area. The picture shows Charles Wilson, Soils Technician, with a student in the laboratory.



Normal School Students setting up seed beds under the direction of the agriculture teacher.

## AGRICULTURAL CREDIT, COOPERATIVES AND MARKETING

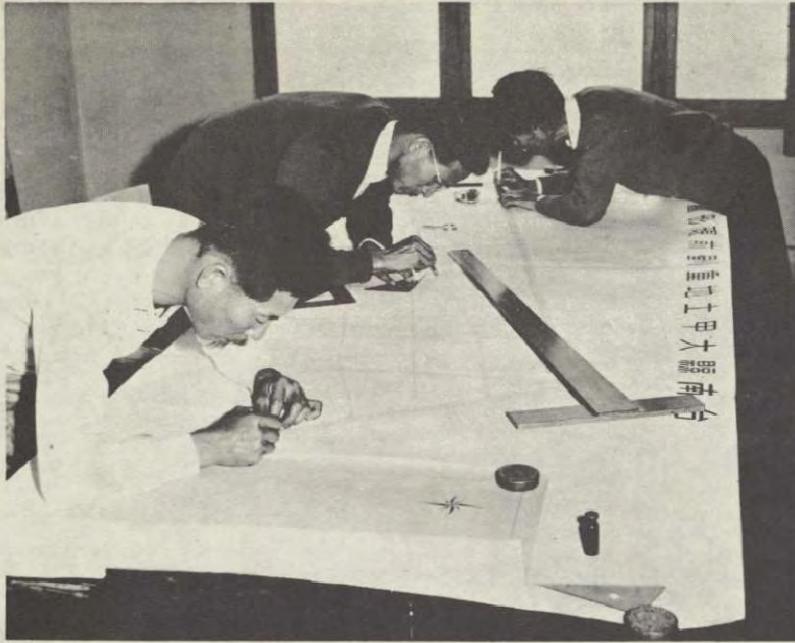


Two members of the Buchon Horticultural Cooperative processing part of the 27,000 cans of peaches which were marketed as canned instead of fresh fruit by the cooperative in 1960.

## LAND TENURE AND AGRARIAN REFORM



A member of the Farmers' Association receives a share of stock from the Khanh Hoa chief of the province in the Vietnam land development program.



## SETTLEMENT PLANNING

Sound settlement projects require careful planning to fit the size of the farm plots to the resources available for the best utilization of the land. Such planning is shown here in the land administration office in Taiwan.

## HOME DEMONSTRATION WORK



Local leader demonstrating home improvement - Vietnam.



Canned lemasa in glass jars ready for storing. Tinned canned items are scarce in the rural Philippines, being mostly imported because of the islands' metal shortage. Glass containers for home canning are becoming more available and more reasonable in price.

## HOME ECONOMICS AND RURAL YOUTH

A Four-H Girl in Honduras is shown exhibiting chicks in a project that will pay off in egg production and in future broilers.





## RURAL YOUTH

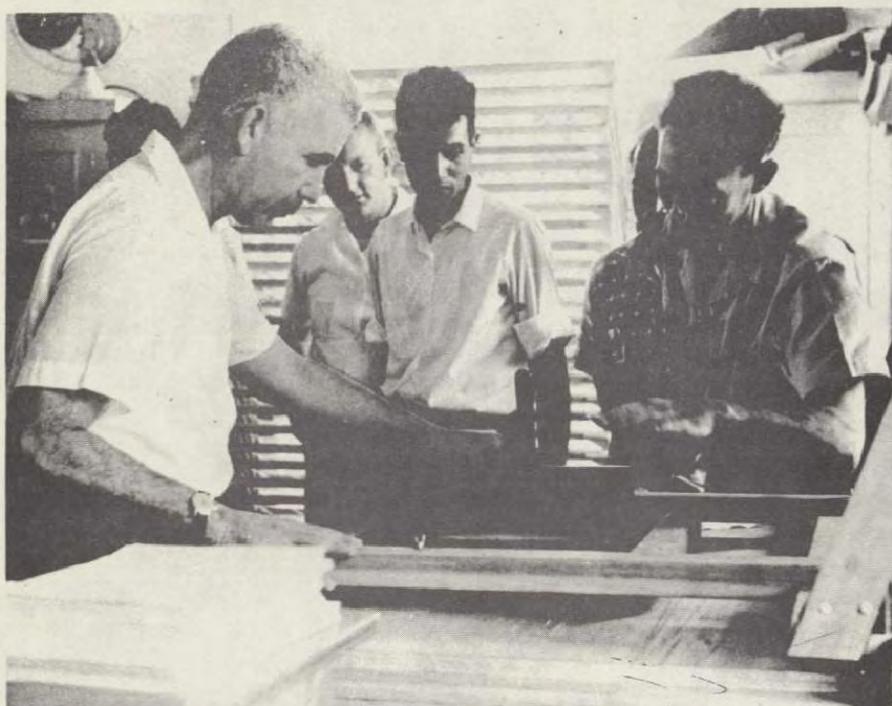
A county extension agent inspects a Korean 4-H clubmember's livestock project and takes out time to tell the member's father about better management of his cow, too.

## AGRICULTURAL COMMUNICATIONS

4-T Club rally at Vinh-Long - December 1959.



## AGRICULTURAL COMMUNICATIONS



Jules Samson (right), recently returned from participation in a 2 months' ICA study grant in communication in the United States, initiates new silk screen equipment recently installed by the Surinam Agricultural Information Service.



Information on better farming methods is displayed in many small farming communities by the Korean Extension Information Service.



## AGRICULTURAL COMMUNICATIONS

Mobile sound trucks are used to disseminate information to farm people using films, slides, taped recordings, posters, and leaflets. In Taiwan, as in many cooperating countries, extensive use is made of mobile units.



High-level Japanese information specialists visit the United States on an ICA-sponsored observation study program. The program included a visit to the Tritown 4-H Club in South Amherst, Massachusetts and Robert Jacque, a dairy farmer, who is the club leader.



## CROPS AND SOILS

A U. S. Extension Advisor shows Korean Extension technicians how to lay out a test plot to show farmers the comparative value of two fertilizers used for increasing rice yield.



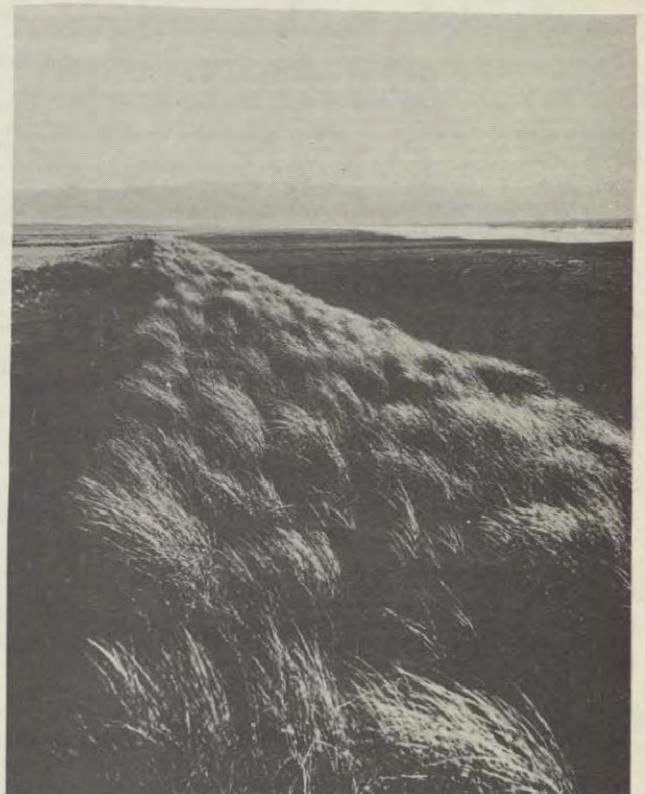
Philippine agricultural workers spray a fine growth of onions with pesticides to protect them against pests and diseases. ICA and national technicians at the rear study the effects of chemicals on the plants.



## CROPS AND SOILS

Thousands of acres of good productive farm land are lost through soil erosion in many countries. An ICA project in Honduras demonstrates the conservation benefits of contour farming.

Fully-matured belts of sand dune-arresting grass parallel the coastline near Chanco, Chile. This first step in halting the moving sand is followed by the planting of belts of trees further inland.



## LIVESTOCK



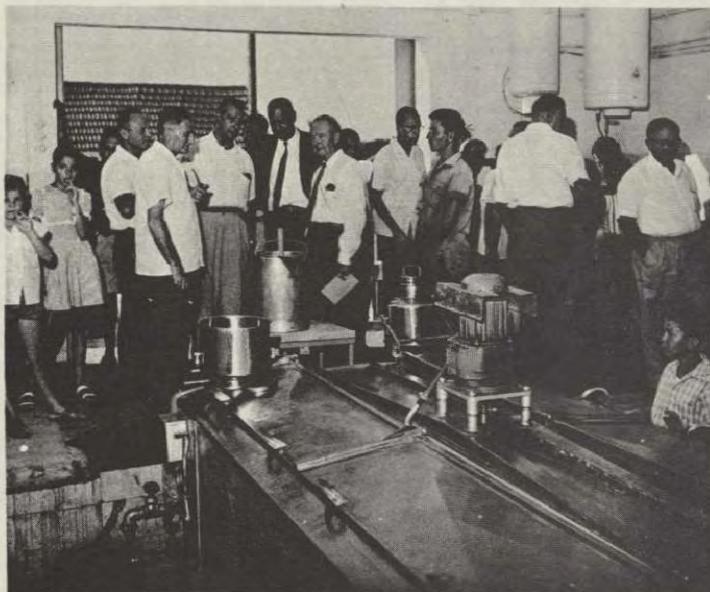
Pasture and livestock improvement are closely related activities in the development of a livestock industry as this picture illustrates. Pasture scene at a Livestock Agricultural Center near Comayagua, Honduras.

Previous to ICA assistance a high percentage of hogs in many countries were lost through hog cholera and poor management. A Honduran veterinarian trainee is demonstrating vaccination technique to swine producers.



## LIVESTOCK

Libyans learn how to drench sheep for control of internal parasites, as a phase of a joint Libyan Government-American Technical Assistance Training Program in Animal Husbandry. Trainees soon became instructors as the demonstrations were moved from region to region during the spring shearing season.



Israel -- USOM Mission officials and advisors inspect a newly installed "Package Type" Milk Collecting Station. Such equipment is rapidly improving sanitary milk processing methods in the country.

## WATER RESOURCES AND ENGINEERING



In areas where there are seasonal water shortages in Chile, deep wells are drilled to obtain a continuous water supply for agricultural needs. Land which formerly produced poor crops due to insufficient water during the summer, is now being developed into a productive agricultural region.



In South Vietnam, farmers are digging a canal to drain excess water from their flooded ricefields. The rainwater will wash out the harmful chemicals from the soil and improve its fertility. They are using long-handled wooden shovels.

## WATER RESOURCES AND ENGINEERING

This home-made water leveler costing 12 rupees (\$3.00 U.S.) and made by a U. S. Water Use Advisor to India is typical of hundreds of simple inexpensive and practical devices made by American technicians to help improve agricultural practices in cooperating countries.

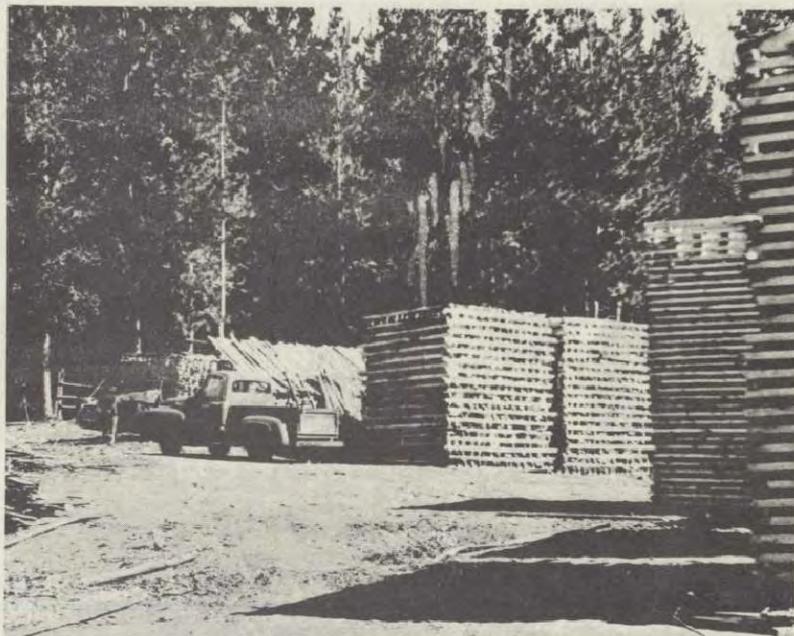


Haiti -- The "prime movers" of Dubedon's new irrigation dam, the Village Leader and the District Extension Agronome with the ICA Agronomy Advisor and the ICA Irrigation Advisor. The dam, largely a self help project of Dubedon villagers, has brought a small desert plain back into crop production.



## FORESTRY

Planting of *Pinus halepensis* made in 1957 by American aid project. The trees and the small check dams across the gulleys have stopped erosion and flood run-off on this slope above the village of Torres. Cerro de la Vieja. Province of Jaén, Spain, May 1960.



Scientific thinning of Insignis Pine plantations in the Concepcion area of Chile produce a valuable by-product in the form of construction poles.



## FORESTRY

Many seedlings for Korea's fuelwood program are now being grown in small nurseries by village forestry associations. Faster-growing hybrids, however, are still grown at various Bureau of Forestry stations where the cross-pollination work is done by village workers under close supervision by station technicians.

The Ministry of Agriculture and Forestry, with assistance from the USOM and its forestry advisor has been conducting a reforestation program for almost ten years. New growth now covers many Korean hillsides.



## FISHERIES



ICA has been assisting the "Deep Sea Fishing Station" at Bombay, India, to improve methods of catching, storing and distributing fish. The first of six railroad refrigeration cars, obtained recently, deliver a load of fresh fish from Bombay to a distant market.



Processing fresh shrimp for sale to U. N. and U. S. Army forces and USOM families is a new industry for Korea but it produced over 300, 000 in foreign exchange in 1960.



## TRAINING

Tanganyika's first ICA-sponsored participants leave home for a group study course in agriculture in the United States.

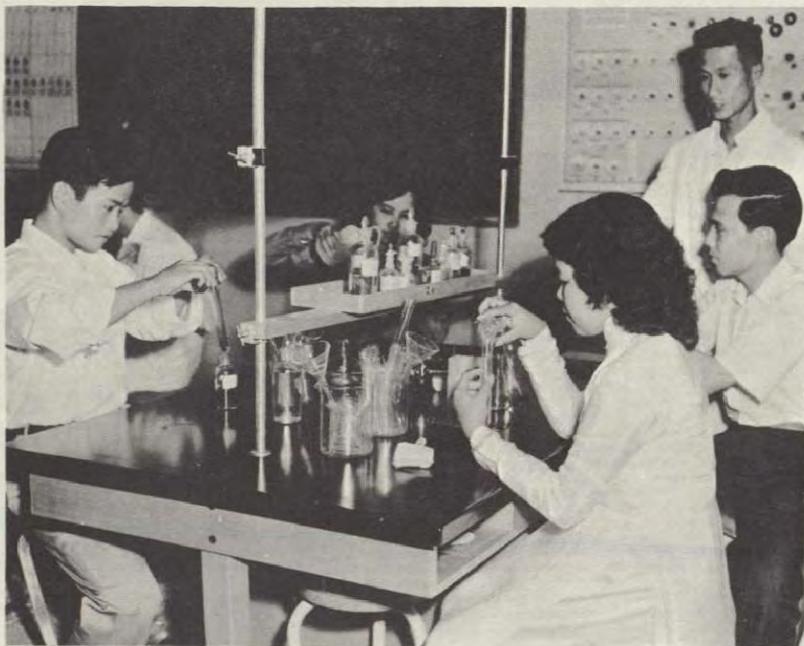


On-the-job training of agriculturalists in Jordan by a U. S. Advisor. This typifies one aspect of training carried on extensively by ICA in agricultural programs in over 60 countries.

## TRAINING



ICA-sponsored regional seminars in major subject fields of agriculture provide training and exchange of information for participants from many nations. Seminars such as the Inter-American Seed Seminar in Chile shown here have promoted seed growers associations and uniform standards for seed certification in Latin America.



Future leaders of their nation's agricultural economy, students at the Blao National College of Agriculture, South Vietnam, learn modern scientific laboratory techniques. Twenty-seven U.S. Land Grant Colleges are assisting in the building of other agricultural institutions in cooperating countries under ICA contracts.