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Semi-Annual Progress Report  
July 1 - December 31, 1969

**"WEED CONTROL IN LESS DEVELOPED COUNTRIES"**

USAID/Oregon State University  
Regional Contract AID/csd-1442

Weed control specialist appointed to Central American post

Lupe L. Garcia joined the project in August, trained at Oregon State for two months and took up an appointment as Project Leader for Central America approximately two months later. Headquarters for Mr. Garcia have been established at San Salvador, El Salvador.

Mr. Garcia earned B.S. and M.S. degrees in weed science at New Mexico State University. He was New Mexico state survey entomologist during the summers of 1965 and 1966.

The initial in-country period has been devoted to making contacts with local institutions and industry. Mr. Garcia reports establishment of research with cooperation of local Ministry of Agriculture personnel. Mr. Garcia is devoting considerable time and effort to a survey of weed problems and weed identification for the region.

Project back-up staff expanded

During the first part of the fiscal year a number of key staff appointments were filled to implement project backup capabilities and services.

Dr. Lyall Taylor was named as Associate Director and joined the staff at Oregon State early in September. Dr. Taylor was with the agricultural division of E. I. Du Pont for 18 years where he held a number of key appointments including product development and sales management for herbicides and fungicides.

He has been active in several professional associations including the Weed Science Society of America, Entomological Society of America and American Phytopathological Society. Dr. Taylor earned a B.S. in entomology from Iowa State University, and M.S. and Ph.D. degrees in entomology at the University of Wisconsin.

Dr. Taylor replaces Dr. Arnold Appleby who has taken over as weed control project leader of the Oregon State University Experiment Station program formerly headed by Dr. William R. Furtick. Dr. Furtick, named Director of the newly formed International Plant Protection Center on January 15, 1969, is continuing as director of the work under project AID/csd-1442, but has relinquished responsibilities for the Experiment Station project.

Edward L. Foland has joined the project staff as a weed control specialist and, in addition to assisting the product evaluation staff, is training for an overseas post. After receiving an M.S. degree in agriculture at the University of Missouri, Mr. Foland spent a year with an agricultural chemical firm and then went into military service. During a tour in Viet Nam he was placed on special assignment as a weed control specialist with the AID Mission.

Also named to the project staff as a weed control specialist is Myron D. Shenk. Following completion of an M.S. degree at Oregon State, Mr. Shenk spent two years with a development project in Mexico. He is currently supervising the herbicide evaluation trials in Oregon while Larry Burrill, project leader for product evaluation, Corvallis, is in Hawaii working with the cooperative field trial work jointly operated by the College of Tropical Agriculture of the University of Hawaii and Oregon State University. Mr. Shenk has been nominated for a position being established in Guayaquil, Ecuador.

The information area of the project was bolstered by the appointment of James E. Moran, Jr., and Allan Deutsch. Mr. Moran earned a B.S. in mathematics at Montana State University and an M.S. in applied statistics at Utah State University. He taught math and computer science at Oregon Technical Institute before joining the staff at OSU in the statistics department. In his assignment to the project Mr. Moran has launched an automated data handling and retrieval system for research results accumulated from OSU, Hawaii and overseas programs.

Mr. Deutsch joined the project staff to assist with informational activities. He formerly was Director of Public Relations and associate editor with the American Soybean Association prior to which he earned an M.S. in communications from Stanford University and a B.S. in irrigation science from the University of California. He is devoting substantial time to publications being generated by the project research that will have wide use in the development of weed control technology in less developed countries.

Another staff appointment was that of Frank Fraser as product evaluation technician. Mr. Fraser has a broad background in agriculture. He is currently on temporary assignment in Hawaii to develop research on amiben under tropical conditions and to aid in the product evaluation program on rice and other tropical crops.

#### Hawaii cooperative field trials

The third annual weed control field trials, jointly sponsored by the College of Tropical Agriculture at the University of Hawaii and OSU, with the cooperation of the chemical industry, were

established on an expanded basis. Two new herbicide trials were set up, one under low rainfall irrigated conditions on coral sand and the other under high rainfall on weathered latosols. More than 40 new experimental compounds from 15 companies are being compared with standard herbicides.

Extensive research on the properties of amiben and amiben mixtures was initiated on rice, corn, sorghum, potatoes, sunflower and pulses. Preliminary results were very encouraging on rice and sunflower. The pulse work is in a very early stage, but appears to offer excellent promise. More detailed follow-up research has been started on rice. This work should generate pertinent information on the best use of the amiben gift to AID by Amchem, Inc.

For the first time there are also two large screening trials established on rice (upland and lowland) plus a rice yield trial. Standard rice herbicides and promising new compounds are included. The annual field day for inspection of all weed control work has been set for February 18-19.

In order to assist the College of Tropical Agriculture at the University of Hawaii with its rapidly expanding work on rice, pastures, pulses and other projects on weed control (of tropical crops and weeds), Larry Burrill, project leader for product evaluation, Corvallis, was transferred to Hawaii for nine months. He was accompanied by Dave Sutherland, product evaluation technician, and is also being assisted by Mr. Fraser.

Several other members of the project staff, Mr. Foland and Mr. Shenk, have traveled to the branch experiment station on the island of Kauai to participate in a two-week rice short course sponsored by the College of Tropical Agriculture.

#### Report issued on weed control research in Colombia

A report, Survey and Evaluation of Weed Control Research in Colombia, was issued by the project. It recommended a number of activities that should be initiated to fully assess the impact of non-traditional inputs to Colombian agriculture.

The report was compiled and written by Lane E. Coulston of the project staff and was based on data he collected in Colombia during the period February-May, 1969. The report includes production statistics, prices, labor requirements for weeding selected crops, yield losses due to weed competition and information on herbicide consumption by crops.

The need for increased emphasis on economic evaluation, concurrent with other aspects of the weed control project, is stressed. Data should be collected--with the implication that efficient methods of data collection need to be devised and implemented--to establish a firm basis for accurate evaluation of the overall (Colombian) agricultural complex.

#### Extension specialist to work in Colombia

Arrangements have been completed for Art Lange, University of California weed control extension specialist, to be assigned as a consultant in weed control extension in Colombia working with Dr. Juan Cárdenas and the Instituto Colombiano Agropecuario staff. During his three-month tour, Mr. Lange will be working on the problem of bridging the gap in weed control information between research and on-the-farm application. He will review techniques of extension work including publications, short courses and demonstrations.

#### Second Ecuadorian counterpart trains in Colombia

Based on the success of the six-month training program in 1968 for Mr. Daniel Navia of Ecuador, a second Ecuadorian counterpart has been assigned to the project in Colombia for training. He is Francisco Gabela, a weed control specialist with the Instituto Nacional de Investigaciones Agropecuarias.

The training program includes basic concepts of weed control and on-station review of current research work at a number of experiment stations in Colombia. Mr. Gabela will be working under the supervision of Dr. Cárdenas and ICA personnel.

#### Peace Corps assigns Ph.D. to Colombia project

Several organizations--ICA (Bogotá), Peace Corps and the USAID/Oregon State University project--have worked out an arrangement whereby Dr. Jerry Doll, a weed control specialist, has been assigned to the project in the capacity of a Peace Corps volunteer.

Dr. Doll volunteered for Peace Corps service after completing a Ph.D. in agronomic weed control and herbicide physiology at Michigan State University. His M.S. work was also done at MSU and his undergraduate degree is from the University of Illinois.

Dr. Doll's specific background and education is being directly applied to project activities. He is assigned by Peace Corps to the Bogotá office of ICA where he is working closely with Dr. Cárdenas.

### Colombia project issues publications

The project staff in Colombia has issued several publications in the six-month period. Among them: Catálogo de Malezas del Tolima Sur, a 66 page weed identification manual of the southern Tolima region with photos and descriptions; Clasificación de Herbicidas, a publication on herbicides classified by mode of action and time of application; plus a publication on safety in using herbicides and a work on weed identification for Colombia (in manuscript form) to include color photos.

A number of manuscripts are in the process of review or publication as Spanish language circulars with recommendations for weed control in corn and other crops grown in Colombia. These will be published by ICA and are authored by Dr. Cárdenas and various of his counterparts.

### Project director and AID monitor's tour of Colombia, Ecuador and El Salvador

The projects in Colombia and Ecuador under the supervision of Dr. Juan Cárdenas, project leader, were reviewed by Dr. W. R. Furtick, project director, and George Peterson of TAB/A&F/AID/Washington. Mr. Lupe García and Dr. Jerry Doll were also on the review in preparation for Mr. García's assignment to El Salvador and Dr. Doll's assignment (as a Peace Corps volunteer) to develop the weed control extension program in Colombia.

The project gave excellent evidence of progress in identifying the important weeds of each production region and publishing and distributing manuals containing weed identification information.

Studies on the time and degree of weed competition (for most major crops) was well along in each region. The data will give solid guidelines for timing of tillage and will be a basis for figuring return potential from either hand weeding or use of herbicides.

What appears to be a previously unknown lepidopterous insect predator of nutsedge was discovered in the lowlands of Ecuador. This insect appears to be unusually efficient in nutsedge Cyperus sp. control without injury to crops. Since this is considered the world's worst weed and no effective biological control is known, this discovery could have enormous significance.

During the trip to El Salvador the necessary administrative arrangements were made with the mission for the posting of Mr. García.

Other project activities

A number of important representatives from government, industry and educational institutions--both domestic and foreign--have visited the project headquarters at OSU. Discussions have been held with key project staff members and tours taken to the Hyslop Farm site of the new product evaluation screening and persistence trials.

Several publications have moved forward during the period. The New Herbicide Evaluation for summer 1969 screening trials was issued. Current changes and revisions have been made to the manuscript of the Weed Control Research Methods Manual; final review and publication is expected early in 1970. The report Survey and Evaluation of Weed Control Research in Colombia has already been mentioned; a follow-up technical paper is in progress.

WEED CONTROL IN LESS DEVELOPED COUNTRIES

USAID/Oregon State University  
 Regional Contract csd-1442  
 BUDGET ESTIMATE  
 Submitted December 1, 1969\*

<u>Classification</u>	<u>Paid 7/1-10/31/69</u>	<u>Est. Costs to 3/31/70</u>	<u>Est. Total 7/1/69-3/31/70 (9 months)</u>	<u>Projected Budget 4/1/70-3/31/71 (12 months)</u>	<u>As Amended*</u>
Salaries and Wages	\$50,988.57	\$81,897	\$132,885	\$215,305	\$235,305
Payroll Assessment	4,039.05	7,370	11,409	19,377	21,177
Travel and Allowances	8,115.23	34,407	42,522	57,400	69,400
Equipment	286.28	10,968	11,254	15,200	18,000
Other Direct Costs	4,988.76	64,960	69,859	94,300	109,300
Indirect Costs					
On Campus		(22,740)		(53,835)	(53,835)
Off Campus		( 3,786)		(16,199)	(20,599)
Total Ind.C.	17,991.66	26,526	44,517	70,034	74,434
<b>TOTALS</b>	<b>\$86,320.55</b>	<b>\$226,128</b>	<b>\$312,447</b>	<b>\$471,616</b>	<b>\$527,616**</b>

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Total budget approved, through 3/31/70	\$686,878
Billed by OSU through 6/30/69	<u>435,891.37</u>
Balance	250,986.63
Addition requested for additional staff and equipment	54,306
Addition requested for U. of Wisconsin project	<u>10,000</u>
	\$315,292.63

\* Amended budget submitted 12/5/69  
 \*\* Includes one FTE for Hawaii and one FTE for Southeast Asia