

ISN-32910

PD-AAN-667/49

9310930

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE

A

A = Add
C = Change
D = Delete

Amendment Number

DOCUMENT CODE

3

2. COUNTRY/ENTITY

S&T/AGR Type C Field Service

3. PROJECT NUMBER

931-0930

4. BUREAU/OFFICE

S&T/AGR

10

5. PROJECT TITLE (maximum 40 characters)

Pest Mgmt. & Related Env. Protection

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
08 31 85

7. ESTIMATED DATE OF OBLIGATION

(Under 'B.' below, enter 1, 2, 3, or 4)

A. Initial FY 71

B. Quarter

C. Final FY 85

8. COSTS (\$000 OR EQUIVALENT \$1 =)

A. FUNDING SOURCE

FIRST FY 71

LIFE OF PROJECT 85

B. FX

C. L/C

D. Total

E. FX

F. L/C

G. Total

AID Appropriated Total

(Grant) S&T/AGR Funds

(500)

()

(500)

(7615)

()

(7615)

(Loan)

(500)

()

(500)

(1129)

()

(1129)

Other U.S. 1. 2.

Host Country

Other Donor(s)

TOTALS

500

500

8744

3744

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION

B. PRIMARY PURPOSE CODE

C. PRIMARY TECH CODE

D. OBLIGATIONS TO DATE

E. AMOUNT APPROVED THIS ACTION

F. LIFE OF PROJECT

1. Grant 2. Loan

1. Grant

2. Loan

1. Grant

2. Loan

1. Grant

2. Loan

(1) ARDN

I

6765

850 a/

7615

(2)

309

820

1129

(3)

(4)

TOTALS

7074

1,670

8744

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code

BS

TECH

B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To provide training and technical assistance to LDC personnel in pest and pest management through interrelated activities that will improve planning, developing and implementation of plant pest and disease control programs. Minimizing adverse effects on health and the environment are an integral part of the program.

14. SCHEDULED EVALUATIONS

15. SOURCE/ORIGIN OF GOODS AND SERVICES

Interim MM YY MM YY Final MM YY

000 941 Local Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a page PP Amendment) This amendment authorizes an increase of \$1,141,000 within the currently approved funding period to cover anticipated Buy-Ins of \$820,000 and an increase in S&T/AGR budget of \$321,000. Total obligations to date are: \$6,765,000 from S&T/AGR budget and \$309,000 from Mission Buy-Ins. This authorization will increase the authority to obligate \$850,000 from the S&T/AGR budget and \$820,000 from anticipated Mission Buy-Ins during the period November 30, 1983 to August 31, 1985.

a/Includes \$623,000 already approved in previous authorization

17. APPROVED BY

Signature: J. S. Robins
Title: S&T/FA, J. S. Robins

Date Signed MM DD YY

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

PROJECT AUTHORIZATION

PART II

ENTITY : Science and Technology Bureau
PROJECT TITLE : Pest Management and Related Environmental Protection
PROJECT NUMBER : 931-0930

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, the Pest Management and Related Environmental Protection project was amended on March 21, 1980. That authorization is hereby amended as follows:

- a. The authorized life of project is increased by \$1,141,381 to \$8,744,000; and
- b. This increase in the authorization level will be funded from Mission Buy-Ins of \$820,000 and S&T/AGR budget of \$321,381.

2. The authorization cited above remains in force except as hereby amended.

J. S. Robins

J. S. Robins
Agency Director for Food and Agriculture
Bureau for Science and Technology

Date: 12/5/83

Attachments

1. Action Memorandum
2. Justification for Noncompetitive Procurement

Clearances: S&T/AGR/AP, JMYohe	<i>JMY</i>	Date: <u>11/17/83</u>
S&T/AGR, MZozynski	<i>MZ</i>	Date: <u>11/18/83</u>
S&T/AGR, ARBertrand	<i>ARB</i>	Date: <u>11/29/83</u>
S&T/PO, GEaton	<i>GE</i>	Date: <u>12/2/83</u>

CW Collier
S&T/AGR/AP: CW Collier: M Blakeney: 11/9/83

November 14, 1983

ACTION MEMORANDUM FOR THE AGENCY DIRECTOR FOR FOOD AND AGRICULTURE, BUREAU FOR SCIENCE AND TECHNOLOGY

FROM : S&T/AGR, Anson R. Bertrand *AR*

SUBJECT : Increase in Funding Authorization for Pest Management and Related Environmental Protection Project (931-0930)

Problem: Your approval is required to increase the authorization level of the Pest Management and Related Environmental Protection Project (931-0930) by \$1,141,381 to cover anticipated Buy-Ins from the Regional Bureaus and Missions of \$820,000 and to increase the S&T/AGR authorization by \$321,381.

Discussion: Because of the increased emphasis the Agency has placed on pest and pesticides management and need to comply with A.I.D. Regulation 16 (A.I.D. Environmental Regulation), there has been an increase in the demand for services under this project. S&T/AGR has not been able to meet this increased demand because of limited funds within our current budget. As a result, certain Missions have been providing funds to S&T/AGR to cover their priority needs under the Buy-In concept. This is consistent with the Bureau's emphasis on Buy-Ins. To date, these Missions have provided \$308,381 to cover eight (8) demands for services through November 30, 1983. These Buy-Ins were provided within the authorized level of the contract and have reduced funds available for other activities.

This has become a high priority project for Missions and Bureaus not only from the point of reducing economic loss from agricultural pests, but also for improving the environmental impact through correct pesticides recommendations and application. The increase of \$1,141,381 requested at this time will provide for \$820,000 for anticipated Mission and Regional Bureau Buy-Ins for technical assistance for project development, implementation evaluation, design, project specific training programs, and region wide pest problem solutions. In addition, \$321,381 will continue the project activities as provided for in the current Scope of Work; i.e., essential services such as environmental assessments, training workshops and seminars, pest management backstopping, staff salaries, travel and per diem, newsletter printing and mailing costs, University of Miami sub-contract and headquarters operating expenses. This increase in the project funding level will provide the necessary funds through August 31, 1985 and time for the new project paper to be approved and funds obligated. The S&T/AGR FY 84 OYB provides \$850,000 for this extension. The \$321,381 being requested at this time is within this \$850,000.

Examples of anticipated Buy-Ins are listed in Attachment A.

Recommendation: That you indicate your approval to increase the funding level of this project by \$1,141,381, including \$820,000 from anticipated Mission Buy-Ins and \$321,381 from S&T/AGR by signing the attached PAF.

Approved *Robert J. ...*

Disapproved _____

Date 12/5/83

Attachment: Anticipated Mission Buy-Ins
Project Data Sheet
PAF
Non-Competitive Procurement Memorandum

Clearances:

S&T/AGR/AP: JMYohe *JMY* Date: 11/17/83
S&T/AGR: MZozynski *MZ* Date: 11/18/83
S&T/PO: GEaton *GE* Date: 12/2/83

Drafted: S&T/AGR/AP: CWCollier:jcr:09/29/83 (Wang # 0505f)
Revised: 11/14/83

ANTICIPATED MISSION BUY-INS

From November 30, 1983 - August 31, 1985

I. Current Commitments from the Missions

<u>Purpose</u>	<u>Amount</u>
Cameroon, Sudan and St. Vincent IPM project design	\$ 36,000
Two crop protection specialists will visit Cameroon to develop training program for national food crop protection program.	22,693
Teams will be sent to Sudan to conduct medical and biological monitoring of TEMIK applications to cotton.	98,853
Pest management specialist will visit Niger to evaluate agricultural project	3,454

II. Additional Buy-Ins expected between December 1, 1983 and August 31, 1985.

a. Cassava Mealy Bug Biocontrol	90,000
b. Pesticide Safety Training Courses 10 each @ 20K per course	200,000
c. IPM Project Design - Thailand	50,000
d. IPM " " - Indonesia	50,000
e. IPM " " - East Africa (Regional)	69,000
f. Environmental Assessments related to AID Reg. 16 15 each @ 8000	120,000
g. Technical Backstopping - Pest Mgt. 10 each @ 8500 each	80,000

Grand Total	\$ 820,000
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BUDGET

Project Title: Pest Management Related Environmental Protection
 Project No : 931-0930
 Contract No : AID/DSAN-C-0252

	<u>S&T/AGR Obligated Funds</u> FM:9/1/80 TO:2/16/84	<u>Completed Mission and Regional Bureau Buy-Ins</u> FM:9/1/80 TO:11/30/83	<u>Total Obligated</u> FM:9/1/80 TO:2/16/84	<u>This PIO/T S&T/AGR Funds</u> FM:2/17/84 TO:8/31/85	<u>Anticipated Mission and Regional Bureau Buy-Ins</u> FM:8/31/83 TO:8/31/85	<u>Total Estimated Cost</u> FM:9/1/80 TO:8/31/85
LINE ITEMS:						
1. Salaries	\$ 972,049	\$ - 0 -	\$ 972,049	\$ 180,000	\$ 162,212	\$ 1,314,261
2. Fringe Benefits	220,622	- 0 -	220,622	60,000	57,400	338,022
3. Consultants	342,948	121,424	464,372	150,000	162,664	777,036
4. Travel and Transportation	611,355	131,471	742,826	200,000	201,626	1,144,452
5. Other Direct Costs	312,151	55,486	367,637	90,000	86,198	543,835
6. Overhead	335,875	- 0 -	335,875	20,000	16,282	372,157
7. Subcontracts	701,000	- 0 -	701,000	150,000	133,618	984,618
TOTAL	\$3,496,000	\$ 308,381	\$3,804,381	\$ 850,000	\$ 820,000	\$5,474,381a/

a/ Represents an increase in the contract of \$1,141,381

WANG#1177e
 11/16/83

November 14, 1983

MEMORANDUM:

TO : SER/CM, Mr. Phillip Casteel

FROM : S&T/FA, J. S. Robins *J.S. Robins*

SUBJECT : Justification for Noncompetitive Procurement Based on Continuation of Activities for the project "Pest Management and Related Environmental Protection" by the Consortium for International Crop Protection (CICP) at Berkeley, California

Approval of a noncompetitive procurement from CICP, based upon continuation of current activities through August 31, 1985, is hereby requested to provide technical services in the field of international pest and pesticide management under the centrally-funded project "Pest Management and Related Environmental Protection".

In accordance with the provisions of FPR 1-3.107(a)(8), Follow-On Procurement, the following information is furnished:

1. Sources considered and evaluation criteria used.

Since the wide variety of services and technical expertise in pest and pesticide management to be furnished under this project cannot be provided by any single entity in the United States, S&T/AGR has queried the executive directors and examined the capabilities of the principal U.S. consortia of universities that work on international agricultural development and integrated pest management in terms of their experience, and expressed interest in providing such services to the LDCs. None of these consortia were interested in bidding on the subject procurement.

Consortia which were considered are the Consortium for International Development (CID), the Mid-America International Agricultural Consortium (MIAC), the Southeastern Consortium for International Development (SECID), the Midwest University Consortium for International Agriculture (MUCIA), the Consortium of Integrated Pest Management (CIPM), and the Consortium for International Crop Protection (CICP). While the first four consortia (CID, MUCIA, MIAC, and SECID) have had extensive experience in international agricultural development projects, their member universities have only infrequently provided the services of qualified plant protection specialists to the LDCs, and in a number of instances they have had to draw upon the resources of one of the universities which are members of CICP or CIPM. The last two consortia (CIPM) and (CICP) were organized specifically to develop integrated pest management programs in the U.S. (CIPM) and in the LDCs (CICP). The universities which are members of the last two consortia are shown in the following table:

<u>University</u>	<u>Consortium for International Crop Protection (CICP)</u>	<u>Consortium for Integrated Pest Management (CIPM)</u>
U. of California/Berkeley	X (H.Q.)	X
Texas A&M University	X	X (H.Q.)
Cornell University	X	X
North Carolina State	X	X
U. of Florida	X	X
U. of Illinois	X	X
U. of Hawaii	X	-
Oregon State University	X	X
Puerto Rico	X	-
U. of Maryland	X	-
U. of Miami	X	-
USDA	X	-
U. of Minnesota	X	-
Purdue University	X	-
Clemson University	-	X
Louisiana State U.	-	X
Michigan State U.	-	X
Mississippi State U.	-	X
Penn State U.	-	X
U. of Wisconsin	-	X
U. of Kentucky	-	X
Washington State U.	-	X
Southern Illinois U.	-	X
Arkansas University	-	X

d

In reviewing this table, it should be noted that seven universities (California, Texas A&M, Cornell, North Carolina State, Florida, Illinois, and Oregon State) are members of both consortia. It should also be noted that the experiences and interests of the other universities which are members of CIPM (Louisiana State, Michigan State, Mississippi State, Penn State, Arkansas, Clemson, Kentucky, Wisconsin, Southern Illinois and Washington State) are largely confined to the U.S., as evidenced by their lack of interest in joining CICP.

Furthermore, CICP has particular strengths and capabilities not possessed by CIPM in international pest and pesticide management programs in tropical agriculture as reflected in the University of Hawaii (the home of the East/West Center) and the University of Puerto Rico which has been strengthened over the years by a 211(d) grant. Additionally, Oregon State University (OSU) brings a needed strength to CICP in the form of expertise in weed science in the LDCs which has been developed over a period of many years by an A.I.D. contract and which has also led to the establishment of an International Plant Protection Center at OSU.

Finally, the University of Miami (the Epidemiology Department of the Medical School) brings a particular and unique strength to CICP in the form of expertise in the prevention, diagnosis, and treatment of pesticide poisonings and in problems of farm worker exposure to pesticides. This department also includes one of EPA's (pesticide) community studies programs and has a number of contracts with EPA, OSHA, and WHO to assess farm worker pesticide hazards and to establish safe re-entry periods following pesticide application to cropped lands. Accordingly, we conclude that the capabilities of CICP in the field of international integrated pest and pesticide management are far superior to those of CIPM.

2. Basis for decision that CICP has predominant capability in the field of international pest and pesticide management.

A. Capability of proposed contractor to provide technical services in pest and pesticide management to the LDCs.

All of the universities which are members of the Consortium have undertaken many activities in the developing countries in the general area of crop protection and have a number of staff members who have served on mission-funded projects as well as FAO-funded projects in addition to serving on the staff of the International Agricultural Research Centers.

In addition to the key scientists on the staffs of the universities which are members of CICP and who are considered to be predominant experts in their field (see paragraph f below), the various institutions have some 450 staff members who have had extensive experience in plant protection problems in the LDCs and who are interested in either long or short-term assignments.

B. Prior experience of CICP and its member universities in the field of international pest and pesticide Management.

S&T/AGR and its predecessors, DSB/AGR and TA/AGR, have provided international pest and pesticide management services to missions and regional bureaus since 1971 by means of two successive contracts with Regents of the University of California. Major activities conducted in the LDCs under these two contracts include:

- Thirty-eight multidisciplinary studies of pest and pesticide management problems;
- Twelve pesticide management workshop/seminars;
- Five pest management short courses;
- Twenty-eight assessments of pesticides to be used in Agriculture Development Projects.

Since the start of the AID/CICP contract in August 1980, there have been major accomplishments in key elements of the project. There follows a partial listing of these accomplishments:

Category	Number of Requests		
	October 1980-81	October 1981-82	October - May 1982-83
USAIDs requests for Technical Assistance	6	18	10
General Training Activities	6	7	4
Program Evaluation & Design	4	3	3
Regional Pest Management Activities	6	13	Transferred to LAC Bureau project.
U. of Miami Subcontract Special Project	6	5	2
International Conference Presentations	7	9	7
Publications	8	7	5

In implementing these activities some personnel were drawn from the University of California system but more than 75 per cent of the personnel were drawn from other land grant universities, the University of Miami Medical School, the USDA, and EPA. The land grant universities principally involved were Texas A&M, Cornell, North Carolina State, University of Florida, Oregon State, University of Hawaii, and the University of Minnesota, although occasionally personnel were drawn from other universities, e.g., University of Arizona, and the State University of New York.

Since 1977, there has been a constantly escalating demand for the previous project to provide short-term consultant services to missions to assist in the preparation of PIDs and PPs which involve assistance for the supply or use of pesticides as well as to conduct Pesticide Management Workshop/Seminars and Pest Management Short Courses and we can expect an increasing number of such requests under the new revised project.

However, the availability of such persons to provide these services, on relatively short notice, one of the very important strengths of this project, is limited by their on-going teaching and research programs as well as the reluctance of their deans to release them from their normal duties and responsibilities for frequent overseas assignments.

To familiarize and involve both the technical and administrative personnel of these other universities with project activities, the previous project director organized an ad hoc advisory committee to the project. During meetings of this project advisory committee, past activities were reviewed in detail and plans were drawn up to provide the required experts to participate in activities programmed for the future.

The members of the project advisory committee, however, felt that the programming of future activities, as well as the prompt release of short-term specialists would function more efficiently if a more formal method of coordination and collaboration could be established.

Accordingly, the project advisory committee suggested that a Consortium for International Crop Protection be established and incorporated in the State of California with each member university being assessed a membership fee of \$2,000. The Consortium was duly incorporated in the State of California on August 15, 1978. At the first meeting of the Board of Directors held at Berkeley, California from January 25-26, 1979, Dr. Ray F. Smith was appointed Chairman of the Board and Executive Director of CICP.

At the second meeting of the Board of Directors on January 21 and 22, 1980, Dr. Smith was reappointed as Executive Director. Dr. D.E. Schlegel, University of California, was elected Chairman and Dr. Ed Glass, Cornell University, was elected Vice Chairman of the Board of Directors. Drs. Smith and Schlegel remain in their respective positions. However, due to retirement, Dr. Glass has been replaced by Dr. W. C. Mitchell of the University of Hawaii.

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C. Specialized facilities and equipment possessed by contractor and considered vital to the effort.

Among the specialized facilities and equipment possessed by the contractor and considered vital to the effort are:

- A pesticide residue laboratory facility and chemical analytical equipment including gas/liquid chromatography equipment (by subcontractor, University of Miami);
- A computerized data base containing technical qualifications and expertise of 700 plant protection specialists covering some 15 scientific disciplines;
- An extensive library of publications, photographs, and 35 mm slides on crop pests and diseases in the LDC.

D. Contractor investment which would have to be duplicated at government expense by another source entering the field.

This can best be expressed in terms of technical expertise in international pest and pesticide management problems. Such expertise could only be developed in other institutions by a series of strengthening grants which would be extremely costly, time consuming, and unnecessary in view of the fact that this expertise is already available from CICP.

E. Time schedules involved, their criticality, and why proposed contractor can best meet them.

This extension will cover a period only through August 31, 1985. During this extension period, S&T/FA plans to develop a new project which will be subjected to competitive procurement. However, in order to maintain project continuity and respond to the requests from the Missions in this important and essential area, there is an urgent need to continue current project activities. As indicated in paragraph D above, strengthening other institutions to provide these services would require a substantial U.S. Government investment in both time and money and would unduly delay initiation of proposed project activities.

F. Contractor personnel considered predominant experts in the field of international pest and pesticide management.

CICP is composed of a group of institutions all of which are generally recognized by the scientific community, both in this country and abroad, as having predominant capabilities in the various scientific disciplines involved in the multidisciplinary approach which is essential to the development of integrated pest and pesticide management programs in the LDCs. These capabilities are the outgrowth of the development of centers of excellence composed of many scientists who have been attracted to the staffs of the various universities by the key scientists who are the professors and heads of departments of the member universities, as reflected in Attachment 1. Thus, the Consortium provides a unique resource which can be drawn upon to implement project activities in the field of integrated pest and pesticide management, a resource which is not duplicated by any other consortium as discussed above.

For the above reasons, I hereby certify that the special capabilities of CICP are necessary for project implementation and that these capabilities are not possessed by any other consortium or institution in the U.S.

Attachment:

A/S

Clearances:

S&T/AGR/AP:JMYone	<u>ABW</u>	Date:	<u>11/17/83</u>
S&T/AGR:Mozynski	<u>MEM</u>	Date:	<u>11/18/83</u>
S&T/AGR:ARBertrand	<u>LAD</u>	Date:	<u>11/19/83</u>
S&T/PO:GEaton	<u>Khan</u>	Date:	<u>12/2/83</u>

Wang # 0539f

Drafted: S&T/AGR/AP:CWCollier:bw:9/29/83 (Retyped 11/14/83)

<u>UNIVERSITY</u>	<u>AREA OF SPECIALIZATION</u>	<u>KEY SCIENTISTS</u>	<u>CURRENT AND PAST POSITIONS AND HONORS</u>
University of California/Berkeley	General Philosophy of Pest Management	Dr. Ray F. Smith	<ol style="list-style-type: none"> 1. Professor of Entomology 2. Executive Director, CICP 3. Ex-Professor and Head, Department of Entomological Sciences, U. of California/Berkeley. 4. Chairman, FAO Panel of Experts on Integrated Pest Management (since 1968)
Texas A&M University	Integrated Pest Management in cotton, sorghum, peanuts	Dr. Perry L. Adkisson	<ol style="list-style-type: none"> 1. Ex-Professor and Head, Department of 2. Deputy Chancellor for Agriculture, Texas A&M University 3. Ex-President, Entomological Society of America 4. Fellow, National Academy of Sciences
North Carolina State U.	Integrated Control Programs for Plant Pathogens	Dr. Lawrence Apple	<ol style="list-style-type: none"> 1. Former Dean, College of Agriculture Associate Director, International Programs
University of Miami	Epidemiology of Pesticide Intoxication	Dr. John Davies	<ol style="list-style-type: none"> 1. Professor and Head, Department of Epidemiology 2. EPA consultant on pesticide toxicology
Cornell University	Host Plant Resistance	Dr. David Thurston	<ol style="list-style-type: none"> 1. Professor of Plant Pathology 2. Former Fellow, Rockefeller Foundation 3. Pathologist, Bogota, Colombia 4. Fellow, American Phytopathological Society
University of Hawaii	Economic Entomology Fruit Fly Control Insect Behavior	Dr. Wallace Mitchell	<ol style="list-style-type: none"> 1. Professor, Entomology Associate 2. Dean, Academic Affairs 3. Pacific Islands experience
University of Minnesota	Epidemiology Crop Loss Assessment Systems Analysis/Modeling	Dr. Paul S. Teng	<ol style="list-style-type: none"> 1. Assist Professor, Plant Pathology 2. S.E. Asia experience 3. Research Fellow, U. of Wageningen/The Netherlands

(Continued)

<u>UNIVERSITY</u>	<u>AREA OF SPECIALIZATION</u>	<u>KEY SCIENTISTS</u>	<u>CURRENT AND PAST POSITIONS AND HONORS</u>
U. of Illinois	Plant Virology, Course Grain Legumes	Dr. Richard E. Ford	1. Prof. & Head, Plant Pathology, INTSOY participant. 2. Fullbright Fellow, U. of Belgrade/Yugoslavia 3. International experiences in SE Asia and China
U. of Maryland	Biological Control Soybean Pests	Dr. A.L. Steinhauer	1. Prof. & Chairman, Dept. of Entomology 2. Entomology 3. Brazil and Sahel experience
Oregon State University	Economics of Crop Protection	Dr. Stanley Miller	1. Professor of Agricultural Economics 2. Director, International Plant Protection Cent
Oregon State University	Chemistry & Toxicology Pesticides	Dr. Virgil Freed	1. Professor of Agricultural Chemistry 2. Member, EPA Science Advisory Board
U. of Florida	Management of Tropical Plant Diseases	Dr. Henry Purdy	1. Professor, Plant Pathology 2. Ex-Head, Department of Plant Pathology 3. President, American Phytopathological Society
U. of Puerto Rico	Plant Pathology,	Dr. Nelia A. Villegas	1. Asian Nematologist 2. Participant in INTSOY & International Meliodogyne Project.
Purdue University	Insect Virology,	Dr. John D. Paschke	1. Prof. Dept. of Entomology 2. European and African experience
USDA	Insect Genetics	Dr. L.E. LaChance	1. Research Scientist & National Advisor for Insect Genetics 2. Head, USDA Metabolism & Radiation Lab 3. Head, Insect Eradication & Pest Control Sect FAO/IAEA, Vienna, Austria 4. African, Asian, Latin American and European experience.

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