



PN ACP-14

Consortium for International Crop Protection

4321 Hartwick Road, Suite 404, College Park, Maryland 20740 USA
Area Code (301) 454-5147 Cable Address: CONSORTICP

July, 1986

TRAINING PROGRAM

IN

IPM AND PESTICIDE MANAGEMENT

PREPARED FOR: USAID/JAMAICA

PREPARED BY: Dr. Carl S. Barfield, Professor of Entomology, University of Florida -- Consultant for Consortium for International Crop Protection

PURPOSE: To Provide Training in IPM and Pesticide Management in Association with AID/Jamaica Project Numbers 532-0128 (Agricultural Research) and 532-0101 (Hillside Agriculture)

SUBJECT TO REVIEW BY:

Dr. James Hester, LAC Chief Environmental Officer
Dr. Carroll Collier, AID/S&T/AGR Pest Management Specialist
Dr. Dale Bottrell, Consortium for International Crop Protection Officer

USAID/Kingston Purchase Order
No. 532-9103-0-00-6098-00

RATIONALE

USAID/JAMAICA has approved Project Identification Documents (PID's) for two new projects: (1) Agricultural Research (AID Project Number 532-0128) and (2) Hillside Agriculture (532-0101). Environmental assessments (EA's) for both projects have been completed (should be attached). Although the pesticides proposed for use in both projects are generally non-persistent and should cause no unusual deleterious effects if used safely and according to their labels, some pesticides proposed as classified as "restricted" by the U.S. Environmental Protection Agency. It is AID policy, when restricted use pesticides are proposed for use in AID-funded projects, that acceptable cost-effective substitutes be sought. If no adequate alternatives can be found or if such compounds are to be used by project collaborators, AID policy requires that a training component and protective equipment be included. This document presents the training component proposed for both the aforementioned projects.

The nature of both AID projects is such that grant solicitations will be a major mechanism for funding specific research efforts. Where advisory panels identify priority needs, and those needs are not addressed by in-coming proposals, special contracts will be let by USAID/Jamaica to address those identified needs. In total, both grants and contracts could encompass Jamaican institutions (e.g., Ministry of Agriculture), regional institutions (e.g., CARDI), crop boards (e.g., the Cocoa Board), private farmers and/or farmer organizations. Until the grant/contract process is initiated, it is impossible to identify exactly what organizations or individuals will be included in the 7 year span of both projects.

One can safely surmise that, during the 14 project-years encompassed in both AID projects, all of the above groups will be involved at some time. Further, individuals in all the above categories will be involved in using general and restricted use pesticides. Since users of these two EPA pesticide registration categories require differential training, a mechanism must exist which allows broad initial training for individuals so that they become certified to apply both general and restricted use compounds. This initial group should be carefully selected to, as much as is feasible, represent all the aforementioned categories of grantees/contractees. This might best be accomplished via an AID-sponsored training session where expert trainers, in concert with selected Jamaicans, are brought in to conduct an intensive course -- one that will result in course participants being classified as "certified applicators". This initial cadre of certified applicators could assist in training and practical demonstrations in future training courses.

Following the initial, intensive training course, there will be need for institutionalizing training within Jamaica. Such a training unit for IPM and Pesticide Management could be provided technical assistance and backstopping via AID-funded foreign technical assistance. Therein, the Jamaican training unit could develop tailor-made training modules to be offered "on demand". The two current (and future) AID projects could then be afforded the opportunity to put covenants in each grant or contract funded saying, in effect, "any individuals in this project using general and/or restricted pesticides must agree to participate in the training offered at (to be named)." This mechanism would allow the to-be-identified Jamaican training unit to tailor-make training for (individuals in) agencies and/or farmers participating in the two AID projects. Length of training and intensity will, of course, depend upon whether individuals want certification as users of general or restricted pesticides. Mode of training must be compatible with trainee education and literacy levels. This tailored, "on-demand" training would appear to be the most appropriate avenue to support

required training in the two AID projects targeted here. Once institutionalized and functional, such a training unit could serve Jamaican agriculture far beyond the scope of the present two projects. This training proposal addresses both the initial training course and the institutionalization of IPM and Pesticide Management training in Jamaica.

CERTIFICATION

The ultimate purpose of training is to produce card carrying, certified pesticide users who have undergone appropriate training in route to certification. The proposed initial training course (see later sections) will utilize written and practical exams to evaluate participant comprehension. It is suggested here that an average score of 75 be required before certification is awarded. AID/JAMAICA may even want to consider an average score of 80 being necessary.

AID/Jamaica and utilized experts cannot legitimately certify Jamaican pesticide applicators. Currently pest control operators (PCO's) in Jamaica are certified by the Ministry of Industry & Commerce. These certification individuals accept advise and council from the Pesticides Advisory Commission. Both the initial training effort and subsequent institutionalized training must make the appropriate Jamaican officials aware of the course content and evaluation criteria being proposed. The ideal situation would be for the Jamaican Government to approve AID's training effort and accept its graduates as certified applicators of pesticides in Jamaica. All participants in proposed training courses who perform successfully should be provided "certification certificates" and added to any Government of Jamaica master list of such qualified applicators. Consideration must be given to any stipulations requiring refresher courses to retain certification. It is suggested here that a short refresher course for re-certification be required every 3 years.

INITIAL TRAINING: WHO PARTICIPATES?

If specific grants or contracts are awarded before the initial training session, some of the participants in the inagural course will be identifiable. In any case, a mechanism must exist to select the first class of trainees. As no single individual likely has sufficiently broad knowledge to make this selection process, a committee seems appropriate.

It is suggested that the participants selection committee be composed of the following individuals (some unnamed here):

1. the USAID/Jamaica project leader for both AID grants,
2. Joe Suah, Head, CARDI,
3. Florence Young, representing both MDA and JAMA,
4. a representative from the UWI agricultural faculty, and
5. an innovative, recognized Jamaican farmer.

While USAID/Jamaica may recognize need to expand or contract this list of committee members, the ultimate group should be small enough to be functional. Obviously, not every Jamaican agricultural entity can be represented at the onset.

This committee should be assembled under the gavel of the AID Project Director(s) and should undertake two missions. First, the participants of the inaugural course should be selected. These first students should encompass the broadest possible range from Ministry-level employees to farmers. Granted, it may be difficult to get farmers to spend 1+ weeks away from the farm, but such should be explored.

The second committee mandate should be to meet formally with the appropriate Jamaican authorities and seek government-level approval for students successfully completing this, and future, training in IEM and Pesticide Management. Following the inaugural course, this committee may decide to remain functional and play some role in the proposed institutionalized, "on-demand", training.

INITIAL TRAINING: WHEN, WHERE, HOW MANY?

When the initial training course is offered depends, in large part, on when AID actually receives spendable money for both project. Structural, budget and grant/contract logistics may well mean a 6 month+ time lag between project initiation and abilities to hold a formal training course. In any event, I would encourage that the initial course be held as soon as possible in order to facilitate production of a cadre of certified applicators. This would address EPA's concerns and would foster quicker development of the "on demand", tailored training critical to project grants/contracts.

The Ministry of Agriculture's Training Center at Twickenham would appear to be a good location for the initial course. It has 12 rooms (with double occupancy, holds 24 people), staffed kitchen for 3 meals/day, and is within short distance of Kingston. Buses can be chartered for trips to the Bodles Experiment Station or other appropriate locale(s) associated with practical field demonstrations.

Primary trainers should be housed at Twickenham Center to facilitate maximum student-trainer interaction. For example, 3 primary trainers at Twickenham would still allow 21 trainees to participate. Local trainers, living in and around Kingston, would have an easy commute to give special lectures and demonstrations.

COURSE OUTLINE

Appendices A & B contain modularized course outlines, primary course itinerary, an estimated budget and suggested trainers for each training module.

LONG TERM TRAINING IN JAMAICA

Jamaican agriculturists can best benefit from specialized training in IPM and Pesticide Management only if the training process is incorporated within a Jamaican agricultural institution. The initial training course will serve to provide broad-spectrum conceptual and practical exercises; however, the need will soon exist to tailor training to specific needs and offer such training "on-demand".

The technical expertise and interests found at the Caribbean Agricultural Research and Development Institute (CARDI, UWI Campus, MONA) would appear to make CARDI a prime candidate to be the training institution in Jamaica. Joe Suah, CARDI's Head in Jamaica, has expressed an explicit interest in CARDI undertaking such a venture.

However, such training at CARDI must have the blessing of Jamaica's own national agricultural organization (Ministry of Agriculture) if it is to be successful over the long term.

It is strongly suggested that USAID/Jamaica explore funding a contract with CARDI to establish tailor-made, "on-demand" training in IPM and Pesticide Management. The initial training course will provide a broad array of training materials, exercises and approaches. These will serve as bases for CARDI to begin the tailoring process. Any USAID/Jamaica contract with CARDI for training should give careful thought to adding costs for up to one person-month (plus travel & per diem) for foreign technical assistance and backstopping. This will allow CARDI to tap international training materials already developed and ready for various of the tailored categories recognized. One possible source for these materials is AID Washington's centrally funded project RFP COD/AN-85-003. After the initial course and ca. two years of development of training materials with foreign technical assistance, CARDI will be in excellent shape to serve both AID and Jamaican agriculture for many years.

Many training institutions are moving to a self-paced curriculum of individualized study which places the student at the center of the education process. Students can come to a central facility, use well-designed, modularized printed or Computer Aided Instructional (CAI) materials and learn at their own pace. Built-in exams provide measures of student comprehension. If such a teaching approach is coupled with practical field exercises, the student has no problem relating "concept" to "practice" and, in fact, learns more at a quicker pace. Tailored, "on-demand" courseware might best be approached in this fashion. Many worldwide institutions have developed these type materials, and CARDI should explore using a similar approach.

The University of West Indies Long Distance Teaching Experiment (UWIDITE) represents an experiment whereby Jamaica is linked to Barbados by satellite and to Dominica, Trinidad and St. Lucia by radio. All 5 islands can share two-way communication, and courses have been offered from one island to the other. Students can ask questions during lectures. Such a linkage offers the possibility for CARDI to develop training expertise in IPM and Pesticide Management for both Jamaica and a large part of the Caribbean Region.

TRAINERS

The course outline (see Appendices A & B) demands the following expertise (1-3 are principal trainers; 4-6 are special lecturers):

1. Integrated Pest Management -- suggest Ph.D. trained in relevant pest discipline(s), knowledgeable of Jamaican agricultural problems and capable of teaching concepts and practicalities of IPM, Economic Thresholds and Sampling
2. Pesticides -- suggest Ph.D. trained in relevant pest discipline(s), thoroughly knowledgeable of all aspects of pesticides, and preferably one who has served both as a teacher and a pesticide coordinator for some reputable institution. Past experience in the pesticide certification process is mandatory.

3. Farming Systems -- suggest Ph.D. trained in anthropology or relevant social science discipline, experienced in Caribbean (Jamaica specifically if possible) and thoroughly knowledgeable about farming systems methodology. Formal training and experience in agriculture are mandatory.
4. Jamaican -- someone knowledgeable about laws governing Jamaican pesticide registration, certification of applicators in Jamaica, etc. Suggest Lester Woolery, Pesticides Advisory Commission
5. Jamaican -- someone who has broad-spectrum knowledge on the general types of farms and pest control methods used in Jamaica, as well as primary sources Jamaican farmers used for pest control information. Suggest Joe Suah, CARDI
6. Jamaican -- someone who is knowledgeable about agromedical issues in Jamaica and proposed solutions. Suggest Florence Young, President, JAMA

One possible way to identify the best personnel for 1-3 above would be for AID/Jamaica to work with AID Washington's Centrally-Funded Project (RFP. COD/AN-85-003) which has at its disposal a wide range of expertise and already developed training materials in IPM and Pesticide Management. Experts 4-6 should come from Jamaica, and they will add credence to the course. These 6 trainers could do an excellent job in the course outlined in Appendices A & B. CAUTION: Expertise is one thing -- teaching ability is another. The most effective course can occur ONLY if these 6 people are experts and good teachers. Students will gain little if trainers do not know how to teach.

EXISTING TRAINING MATERIALS

Literally hundreds of specialized and/or general training materials in IPM and Pesticide Management have been developed. The Guides and Manuals for Pesticide Applicator Training: January 1979 - August 1985 (USDA/EPA Bibliographies & Literature of Agriculture Number 47) lists 1,548 handbooks, manuals, pamphlets, etc. on virtually every aspect of Pesticide Applicator Training. Note should be taken, however, that many of these materials may not lend themselves to incorporation into a structured course.

The University of Florida (Department of Entomology & Nematology, Gainesville), in concert with the Pan American School of Agriculture (Honduras), has developed a series of multi-lingual slide/text and CAI (for IBM/XT) modules, including:

1. What is IPM
2. Concepts and Methods of Sampling
3. Development of Economic Injury Levels & Thresholds
4. Key to Orders of Insects
5. Pesticides
 - a. pesticide laws
 - b. the pesticide label
 - c. pesticide formulations
 - d. pesticide application equipment
 - e. sprayer mechanics
 - f. pesticide applicator safety
 - g. pesticide names

Each module comes with built-in glossary to assist student in terminology and with pre- and post-testing for student evaluation (via response-judging).

The International Rice Research Institute (Los Banos, The Philippines) has developed some of the most modern self-paced modules anywhere. They, however, tend to draw mostly on rice examples. Despite this, careful study should be made of what is available at IRRI -- especially for any CARDI contract on training.

The USAID-funded Consortium for International Crop Protection has developed a broad array of training materials with its member institutions and has experience in holding training sessions in the Caribbean. Among its materials is A Training Program for Pesticide Users (Granovsky, T.A., H.N. Howell, Jr., C.L. Heep, and J.I. Grieshop 1985). This is a well constructed course and has manuals for trainers which provide topical outlines, materials needed, exercises to conduct and test questions.

SUGGESTIONS: THAT:

1. USAID/Jamaica fund the budget (Appendix A), or some relevant sub-set thereof, and hold a training course as soon as possible into the budget year,
2. the USAID/Jamaica Project Director(s) for Projects 532-0128 and 532-0101 be the stimulators for organizing the committee which will select the initial course participants,
3. the committee in (2) obtain approval from appropriate Jamaican officials to insure that students emerging from training courses be recognized as being certified in Jamaica,
4. USAID/Jamaica fund a special contract with CARDI which will focus CARDI as the site for specialized training in IPM and Pesticide Management in Jamaica,
5. USAID/Jamaica insist that all its grantees/contractees from the aforementioned two projects identify persons needing training and certification in IPM and pesticide management and that each contract call for said persons obtaining that training at CARDI,
6. all persons successfully completing the initial (and future) training be awarded certificates stating their name, training site & date, and certification status, and
7. USAID/Jamaica allow any training contract with CARDI to include dollars for foreign technical assistance & backstopping -- at least initially.

APPENDIX A^{1/}

Outline for Inaugural Training

in

IPM and Pesticide Management

JAMAICA, W.I.

Friday

All 6 trainers arrive at Twickenham Training Center and assemble all course materials. Discussion on course logistics, testing, and field trip.

Saturday

Continue as on Friday

Sunday

All trainees arrive at Twickenham Training Center. Registration. Hand out all name tags and course materials.

Monday

7:00 - 8:00 am	Breakfast
8:00 - 8:30 am	Course Introduction (outline of course objectives, review of training materials, preview of testing)
8:30 - 10:00 am	MODULE 1: Farming Systems
10:00 - 11:30 am	MODULE 2: Integrated Pest Management
11:30 - 12:00 noon	Discussion
12:00 - 1:30 pm	Lunch
1:30 - 2:30 pm	MODULE 3: Agromedical Concerns in Jamaica
2:30 - 3:00 pm	Discussion
3:00 - 6:00 pm	Study Time
6:00 - 7:30 pm	Dinner
7:30 - 10:30 pm	Self-Paced Study; Discussion with Trainers

Tuesday

7:00 - 8:00 am	Breakfast
8:00 - 9:00 am	Test over Monday's materials
9:00 - 10:30 am	MODULE 4: State of Pest Control in Jamaica
10:30 - 11:00 am	Discussion
11:00 - 12:00 noon	MODULE 5: Pesticide Laws & Certification Procedures in Jamaica
12:00 - 1:30 pm	Lunch
1:30 - 3:00 pm	MODULE 6: Sampling
3:00 - 4:30 pm	MODULE 7: Economic Injury Levels & Thresholds
4:30 - 5:00 pm	Discussion
5:00 - 7:30 pm	Study Time/Dinner
7:30 - 10:30 pm	Self-Paced Study; Discussions with Trainers

1/

see Appendix B for outline and objectives by MODULE. This course outline designed to optimize trainer-student interaction and use self-paced study reinforcement of all topics.

Wednesday

7:00 - 8:00 am	Breakfast
8:00 - 9:00 am	Test over Tuesday's materials
9:00 - 10:00 am	MODULE 8: The Pesticide Label
10:00 - 11:30 am	MODULE 9: Pesticide Naming and Formulations
11:30 - 12:00 noon	Discussion
12:00 - 1:30 pm	Lunch
1:30 - 3:00 pm	MODULE 10: Pesticides and Their Effects on People
3:00 - 3:30 pm	Discussion
3:30 - 5:00 pm	MODULE 11: Pesticide Application Equipment
5:00 - 7:30 pm	Study Time/Dinner
7:30 - 10:30 pm	Self-Paced Study; Discussions with Trainers

Thursday

7:00 - 8:00 am	Breakfast
8:00 - 9:00 am	Test over Wednesday's materials
9:00 - 11:00 am	MODULE 12: Calibration of Spray Equipment
11:00 - 11:30 am	Discussion
11:30 - 1:30 pm	Free Time/Lunch
1:30 - 3:30 pm	MODULE 13: Pesticide Applicator Safety
3:30 - 4:00 pm	Discussion
4:00 - 7:30 pm	Study Time/Dinner
7:30 - 10:30 pm	Self-Paced Study; Discussions with Trainers

Friday

7:00 - 8:00 am	Breakfast
8:00 - 9:00 am	Test over Thursday's materials
9:00 - 11:00 am	MODULE 14: Pesticide Storage and Disposal
11:00 - 11:30 am	Discussion
11:30 - 1:30 pm	Free Time/Lunch
1:30 - 3:00 pm	MODULE 15: Pesticide Clean-Up of Spills
3:00 - 3:30 pm	Discussion
3:30 - 7:30 pm	Study Time/Lunch
7:30 - 10:30 pm	Self-Paced Study; Discussions with Trainers

Saturday

6:30 - 7:30 am	Breakfast
7:30 - 8:30 am	Travel to Bodles Experiment Station (or other appropriate location)
8:30 - 12:00 noon	Field Demonstrations
12:00 - 1:30 pm	Lunch (box lunch prepared at Twickenham and brought to field)
1:30 - 4:00 pm	Field Demonstrations
4:00 - 5:00 pm	Travel to Twickenham Experiment Station
5:00 - on	Free Time and Dinner

Sunday

Free Time/Self-Paced Study/Discussions with Trainers

Monday

7:00 - 8:00 am	Breakfast
8:00 - 9:00 am	Test over Field Trip
9:00 -11:00 am	MODULE 16: Antidotes/First Aid
11:00 -11:30 am	Discussion
11:30 - 1:30 pm	Lunch
1:30 - 2:00 pm	Course Summary
2:00 - 3:00 pm	Student Evaluations of Course
3:00 - 4:00 pm	Awarding of Certification Certificates
4:00	Course Dismissed

ESTIMATED BUDGET FOR
INAGURAL TRAINING COURSE IN
IPM AND PESTICIDE MANAGEMENT

ITEM	ESTIMATED COST (\$ US)
Room/Board at Twickenham Center ^{a/} (6 persons/\$15 ea./2nights)	180.00
Room/Board at Twickenham Center ^{b/} (21 persons/\$15 ea /8 nights)	2,520.00
Two person-months of preparation ^{c/} and overseas training (\$200/day X 60 days)	14,400.00
Per Diem for Overseas Trainers (3 people X \$ 25/day X 11 days)	825.00
Airfare for Overseas Trainers	3,000.00
Preparation & Duplication of Course Materials	2,000.00
Local Arrangements Coordinator ^{d/}	0
Supplies for Course ^{e/}	500.00
Computer Rental (IBM/XT) ^{f/} (3 computers @ \$60 ea per day X 4 days)	720.00
Bus Charter + Driver for Field Trip	175.00
TOTAL ESTIMATED COSTS.....	\$23,645.00

^{a/} foreign trainers pay own room & board from AID per diem (Training Center must be reserved 1.0 to 1.5 months in advance)

^{b/} figured on 21 for same reason as in footnote a

^{c/} suggest working with AID Washington's Project COD/AN-85-003 for identification of 3 foreign trainers; in any case, preparation time will be demanded prior to course

^{d/} assumes AID/Jamaica will use present staff member in this capacity

^{e/} example pesticides, student certificates, paper, pencils, pesticide mixing containers

^{f/} optional item, depending upon who the trainers turn out to be (some may not have computer aided instructional courseware to utilize)

NOTE: footnote c includes 20% indirect cost addition to cover such costs in case any contractees demand overhead

APPENDIX B^{1/}

MODULARIZED OUTLINES

FOR

INAGURAL TRAINING COURSE

MODULE 1: Farming Systems

Trainer: The Foreign Anthropologist

Objective(s): TO:

- (1) expose students to methods of rapid rural appraisal for determination of farmer IPM practices and pesticide use patterns

Topical Outline:

- I. What is farming systems
- II. Rapid Rural Appraisal
 - A. definition
 - B. methods
 - C. expected results/analyses
 - D. an example

MODULE 2: Integrated Pest Management

Trainer: The Foreign IPM Specialist

Objective(s): TO:

- (1) teach the principles underlying IPM
- (2) exemplify major tactics & strategies used in IPM
- (3) exemplify the steps involved in building any IPM program

Topical Outline:

- I. Principles underlying integrated pest management
- II. Tactics and Strategies of IPM
 - A. biological control
 - B. chemical control
 - C. physical control
 - D. host plant resistance
 - E. legislative control
 - F. genetic control
 - G. cultural control
- III. Stepwise development of an IPM program

^{1/}additional readings, exercises and/or computer aided instructional materials available in central location in the nightly self-paced study period to support daily modules

MODULE 3: Agromedical Concerns in Jamaica

Trainer: Jamaican (suggest Florence Young)

Objective(s): TO:

- (1) list the major medical problems caused by pesticide use in Jamaica and the chronic/long term effects
- (2) describe how human toxicities are monitored in Jamaica
- (3) outline proposed steps for alleviating human toxicity problems

Topical Outline:

- I. Major problems in Jamaicans from pesticide use
 - A. chronic
 - B. long term
- II. Monitoring of human pesticide poisoning in Jamaica
 - A. who monitors
 - B. data collected & analyses conducted
 - C. any results of analyses to date
- III. Alleviating pesticide use problems in Jamaicans

MODULE 4: State of Pest Control in Jamaica

Trainer: Jamaican (suggest Joe Suah)

Objective(s): TO:

- (1) relate major tactics and strategies used by Jamaican agriculturists in pest control
- (2) identify sources of farmer information about pest control

Topical Outline:

- I. Types of farming systems in Jamaica
 - A. % corporate
 - B. % small farm (or subsistence)
- II. Methods use for pest control in Jamaica/examples
 - A. biological
 - B. cultural
 - C. chemical
 - D. cultural
 - E. other
- III. From whom do farmers get their advice about pest control

MODULE 5: Pesticide Laws and Certification of Applicators in Jamaica

Trainer: Jamaican (suggest Lester Woolery)

Objective(s): TO:

- (1) specify Jamaican laws for registering pesticides and pesticide applicators

Topical Outline:

B

MODULE 6: Sampling

Trainer: The Foreign IPM Specialist

Objective(s): TO:

- (1) identify the fundamental steps in setting up any sampling program in support of IPM or monitoring of pesticide effectiveness

Topical Outline:

- I. Why sample
 - A. measuring
 - B. decision-making
- II. Ingredients in any sampling plan
 - A. pest dispersion patterns
 1. random
 2. uniform
 3. clumped
 - B. sample allocation plan
 1. simple random
 2. stratified random
 3. systematic
 4. "haphazard"
 - C. sample unit size (choosing a tool)
 - D. numbers of samples to take
 1. sample precision
 2. relevance to the economic threshold as a decision-maker

MODULE 7: Economic Injury Levels and Thresholds

Trainer: The Foreign IPM Specialist

Objective(s): TO:

- (1) instruct on the importance of EIL/ET values in IPM
- (2) exemplify 7 basic steps in constructing EIL/ET values

Topical Outline:

- I. Why need EIL's and ET's
 - A. making control decisions
 - B. balancing the attack against pests
 - C. economics
- II. Some basic steps
 - A. how the crop grows
 - B. which "pests" are present
 - C. which are really pests
 - D. determining the density-damage relationships
 - E. setting the EIL
 - F. setting the ET
 - G. assisting farmers

MODULE 8: The Pesticide Label

Trainer: The Foreign Pesticides Specialist

Objective(s): TO:

- (1) teach students how to read and comprehend any pesticide label

Topical Outline:

- I. Why are labels important
- II. Parts of a label
- III. How to use a label

MODULE 9: Pesticide Naming and Formulations

Trainer: The Foreign Pesticides Specialist

Objective(s): TO:

- (1) discuss and show various pesticide formulations & how they are named

Topical Outline:

- I. What does formulation mean
- II. Active and inert ingredients
- III. Types of formulations
 - A. liquid formulations
 1. aerosols
 2. emulsifiable concentrates
 3. flowables
 4. liquid gases
 - B. dry formulations
 1. baits
 2. dusts
 3. granules
 4. soluble powders
 5. wettable powders
- IV. Characteristics and Inherent dangers in different formulations

MODULE 10: Pesticides and Their Effects on People

Trainer: The Foreign Pesticides Specialist

Objective(s): TO:

- (1) teach the dangers of symptoms of human pesticide poisonings

Topical Outline:

- I. The danger of pesticides
- II. How poisoning occurs
- III. Signs and symptoms

5

MODULE 11: Pesticide Application Equipment

Trainer: The Foreign Pesticides Specialist

Objective(s): TO:

- (1) show and discuss various types of pesticide application and relate each to the pesticides's formulation
- (2) highlight pro's and con's of each type application equipment

Topical Outline:

- I. Briefly review types of formulations
- II. Types of application equipment
 - A. back-pac sprayers
 - B. high-boy tractors
 - C. airplanes
 - D. helicopters
 - E. boom tractor sprayers
 - F. several others
- III. Pro's and Con's of each applicator for various formulations

MODULE 12: Calibration of Spray Equipment

Trainer: The Foreign Pesticides Specialist

Objective(s): TO:

- (1) teach the proper method of calibration of each types of equipment discussed in MODULE 11

Topical Outline:

- I. Why is calibration important
- II. Distance = (rate) x (time): simple, but often not remembered
- III. Calculation of the amount of pesticide
- IV. Clean-up, maintainance and repair of application equipment

MODULE 13: Pesticide Applicator Safety

Trainer: The Foreign Pesticides Specialist

Objective(s): TO:

- (1) instruct on the safest possible way to protect pesticide applicators during the mixing and spraying of pesticides

Topical Outline:

- I. The importance of safety during mixing and application
- II. Clothing and safety equipment
- III. Before you get started

MODULE 14: Pesticide Storage & Disposal

Trainer: The Foreign Pesticides Specialist

Objective(s): TO:

- (1) teach proper storage and disposal techniques for pesticides

Topical Outline:

- I. Why is proper storage so important
- II. Proper storage procedures
 - A. where pesticides should be stored
 - B. how pesticides should be stored
 - C. criteria for a storage location
- III. Disposal of pesticide containers
 - A. the need for disposal
 - B. disposal of surplus pesticides
 - C. proper disposal of containers
 - 1. those that will burn
 - 2. those that will not burn
 - 3. those that have mercury, lead, cadmium, arsenic or inorganic pesticides
- IV. Trouble shooting
 - A. potential problems
 - B. fires
 - C. leaks
 - D. floods

MODULE 15: Clean-up of Pesticide Spills

Trainer: The Foreign Pesticides Specialist

Objective(S): TO:

- (1) teach the safe steps in clean-up of any particular pesticide spill

Topical Outline:

- I. Dry spills
- II. Wet spills
- III. What to do
- IV. Safety equipment needed for each type spill
- V. Preventing accidents

MODULE 16: Antidotes and First Aid

Trainer: The Foreign Pesticides Specialist

Objective(s): TO:

- (1) teach the proper recognition of pesticide poisoning symptoms and associated antidotes and first aid measures

Topical Outline:

- I. General, immediate steps to take for all pesticide poisonings
 - A. stop contact with pesticide; move victim away; wash off skin & eyes
 - B. if possible, notify a doctor, hospital or clinic
 - C. read label of pesticide involved for statement of treatment
 - D. save pesticide container for doctor; at least save sample of any material vomited
- II. Pesticide on the skin
 - A. what NOT to do
 - B. what to do
- III. Pesticide in the mouth
 - A. what NOT to do
 - B. what to do
- IV. Poison breathed through the nose and mouth
 - A. what NOT to do
 - B. what to do
- V. Use of respiratory equipment
- VI. Poison in the eyes
 - A. what NOT to do
 - B. what to do

THE FIELD TRIP:

Trainers: All 3 Foreign Specialists

Objective(S): TO:

- (1) demonstrate the concepts and techniques taught in the course

The following will be demonstrated:

1. sampling techniques, counting and keeping of field records
2. pesticide mixing in back-pac sprayer
3. pesticide calibration
4. pesticide application
5. census of pest mortality from application
6. mock poisoning exercise of someone present