Pesticide Safety Education Program Final Report. 2009

PROJECT TITLE: **Pesticide Applicator Training/Testing for Arizona Weed Management Personnel**

PROJECT LEADERS:

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PROJECT MEMBERS:

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PROJECT COLLABORATORS:

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PROJECT COORDINATOR

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PROJECT ABSTRACT

A consortium involving University of Arizona Cooperative Extension, University of Arizona Pest Management Center and Arizona Department of Agriculture (ADA) personnel developed a pesticide applicator safety training curriculum adapted for the State of Arizona, but based on the National Pesticide Applicator Certification Core Manual. This course was presented and certification testing offered during September to November 2009 at four locations in northern and central Arizona. Certification testing exercises involved administering the National Pesticide Applicator Certification Core Exam, which was recently adopted by the Arizona Department of Agriculture as the state's new pesticide applicator core exam. Target audience for this training was pesticide applicators who needed initial certification as private, commercial or governmental agricultural applicators representing federal, tribal, state, county, municipal, and private ranch or farm employees. Previously certified applicators also attended the training sessions to receive continuing education units (CEU's) to maintain current licensing.

Training sites were consolidated in northwestern, north central, northeastern and central Arizona. Thirty-nine of 50 trainees (78%) passed the core exam after attending the six-hour training workshop and received their agricultural applicators license. Ten people attended for CEU's; seven people attended to gather pesticide safety information and did not take an exam. Thirteen people passed exams for commercial categories (11 forestry and 2 aquatic).

PROJECT GOALS

A. Provide initial agricultural pesticide applicator safety training and offer certification testing in accordance with the Arizona Department of Agriculture pesticide licensing requirements. Deliver the training and testing in a cohesive and organized manner to efficiently utilize personnel and resources in a limited economy.

B. Develop a state-level pesticide applicator safety training consortium of extension agents, specialists, tribal educators, collaborating agency personnel and private organization members.

C. Assemble pesticide safety educational materials into a curriculum for pest management educators who conduct pesticide training workshops.

D. Offer pesticide training CEU's for licensed applicators concurrently with core pesticide applicator training events.

PROJECT RESULTS

A1. The National Pesticide Applicator Certification Core Manual is a pesticide applicator training guide published by the National Association of State Departments of Agriculture Research Foundation. Pest management principles and concepts contained in this publication were developed to prepare students to take the National Pesticide Applicator Certification Core exam which became the official basic agricultural core certification test for the state of Arizona in August 2009.

Providing the standardized national training core manual is an effort to improve the level of pesticide use training in all states. The topics, methods and principles in the core manual were designed to minimize exposure and potential risks associated with pesticide use and accomplishes one of the goals addressed in the Federal Insecticide, Fungicide and Rodenticide Act;

A2. This project also supported national pesticide risk reduction efforts by fulfilling a need for pesticide applicator training in northern and central Arizona regions where regular outreach education opportunities are scarce. The State of Arizona's economic situation has caused reduced staffing and funding for regulatory functions such as agricultural applicator certification. The collaborative project supported by this grant provided 50 individuals with timely and critical safety training that is necessary to become certified agricultural pesticide applicators.

A3. Another major accomplishment was introducing and delivering the National Pesticide Applicator Certification Core Exam to Arizona citizens who needed to become certified applicators. This exam (and the accompanying training manual) is now the core agricultural pesticide applicator certification procedure for the state of Arizona.

B1. A unified collaboration of Cooperative Extension agents and specialists, ADA regulatory personnel, tribal educators at Dine College, and Southwest Vegetation Management Association effectively consolidated personnel, time and resources to deliver a timely and valuable outreach education program to underserved clientele.

B2. Underserved communities, tribes, local, state and federal agency clientele that sent trainees to the workshops included the Navaho and Hopi Tribes, Salt River Pima-Maricopa Indian Community, U.S. Bureau of Indian Affairs, Arizona Game and Fish Department, U.S. a National Wildlife Refuge, U.S. National Park Service, U.S. Natural Resources Conservation Service, U.S. Forest Service, private sector pest control applicator companies, environmental consultants, and an agricultural crop producer.

C1. Course materials were based on topics and concepts contained in the National Pesticide Applicator Certification Core Manual published by the National Association of State Departments of Agriculture and financially supported by the EPA Office of Pesticide Programs, the Council for Agricultural Science and Technology and the National Association of State Departments of Agriculture Research Foundation. University educators, the EPA Office of Pesticide Programs, State Departments of Agriculture, USDA and the Council for Agricultural Science and Technology contributed expertise and text for the core manual development. Another resource used to prepare PowerPoint presentations was a CD developed by Washington State University Cooperative Extension which contains a 1-hour presentation for each of the 12 chapters in the core manual. Where necessary, the WSU PowerPoint slides were modified, adapted, or updated for Arizona-specific situations. See Appendix 1 for the course outline.

C2. Based on experiences and participant comments from the four 2009 workshops, suggestions were provided to revise, condense or clarify materials for some of the topics.

D1. Ten certified applicators attended the workshops to obtain CEU's to maintain licensing. Their participation indicated a need for delivery of advanced pesticide applicator safety training beyond core training.

PARTICIPANT EVALUATIONS OF WORKSHOPS

A post-workshop evaluation form was given to each trainee so they could express their opinions about how much they learned, the subject matter value to their jobs, how well the workshop prepared them for passing the exam, what subjects need to be added, improved, or removed from the curriculum, and the best time of the year to attend pesticide applicator workshops. Questions were divided into two groups. 1) administrative matters, and 2) evaluations of subject matter presented during the workshops (Table 1).

Trainees' response to administrative questions indicated overall approval about the conduct, timing of the workshops, content, instructor abilities, and value of topics for increasing on-the-ground job skills.

Problems were identified concerning: 1) too large amount of information that was covered in a short amount of time (6 hours) devoted to instruction; 2) trainees without email/internet capabilities (rural residents without nearby urban centers) had difficulty obtaining study materials prior to

attending workshops. Suggestions for improvement were to increase training from 1 day to 1.5 days followed by testing. Prior to future workshops, trainers should consider purchasing a supply of the national applicator's manual and dispersing them well before workshops happen. A common complaint from attendees (and at least one instructor) was the 2+ hours of time needed to download and print the national core manual.

Comments from supervisors who attended the training indicated that late summer and early fall is a busy time for land management agencies in Arizona; therefore, late winter/spring training sessions are better suited to their work environments. They also noted that pesticide applications and other field tasks are infrequent during the December through March time frame, and it is easier to get field crews trained in that portion of the growing season, plus training shortly before the spring field work begins will be fresher in crew member's minds than early fall training.

Based on a 1 to 5 subjective rating index scale, workshop attendees communicated a definite perceived increase in the amount of learning that they accomplished during the six hour workshop (Table).

TABLE 1. 2009 ARIZONA PESTICIDE APPLICATOR TRAINEE PERSONAL QUALITATIVE ESTIMATES OF LEARNING PROGRESS

PRE- AND POST-WORKSHOP TRAINING TOPIC RATINGS	No. of Evaluators	N-West AZ	N-Cent. AZ	N-East AZ	Cent. AZ	Weighted ROW MEAN
		4	15	23	7	
		-------KNOWLEDGE RATING INDEX VALUE---- (1 = low; 5 = high)				
A Pesticides and the Environment						
1. Before workshop		4.75	2.80	2.13	3.85	2.87
2. After workshop		4.75	4.20	3.82	4.14	4.06
3. Percent change		0.00	+50.0	+79.3	+7.5	+47.00
B Pest Management and IPM						
1. Before workshop		4.50	2.87	2.00	3.28	2.65
2. After workshop		4.75	3.93	3.82	3.85	3.93
3. Percent change		+5.6	+36.9	+91.1	+17.4	+57.00

TABLE 1. continued 2009 ARIZONA PESTICIDE APPLICATOR TRAINEE PERSONAL QUALITATIVE ESTIMATES OF LEARNING PROGRESS

PRE- AND POST-WORKSHOP TRAINING TOPIC RATINGS		N-West AZ	N-Cent. AZ	N-East AZ	Cent. AZ	Weighted ROW MEAN
	No. of Evaluators	4	15	23	7	
		------KNOWLEDGE RATING INDEX VALUE----- (1 = low; 5 = high)				
C Pesticide Laws						
1. Before workshop		4.00	2.53	1.78	2.42	2.28
2. After workshop		4.75	3.67	3.69	3.57	3.78
3. Percent change		+18.8	+45.1	+107.3	+47.5	+65.70
D Pesticide Labels and MSDS						
1. Before workshop		4.75	2.73	2.13	3.42	2.71
2. After workshop		4.75	4.00	4.00	4.42	4.12
3. Percent change		0.00	+46.5	+87.8	+29.2	+59.60
E Pesticide Formulations						
1. Before workshop		3.25	2.27	1.78	2.57	1.77
2. After workshop		4.00	3.47	3.48	3.85	3.65
3. Percent change		+23.1	+52.9	+95.5	+49.8	+70.00
F Safety and PPE						
1. Before workshop		4.75	3.00	2.39	3.42	2.92
2. After workshop		5.00	4.27	3.86	4.28	4.12
3. Percent change		+5.3	+42.3	+61.5	+25.1	+45.80
G Mixing, Loading and Spray Calibration						
1. Before workshop		4.50	2.20	1.86	2.71	2.30
2. After workshop		3.50	3.73	3.69	3.71	3.69
3. Percent change		-23.3	+69.5	+98.4	+47.5	+70.90
H OVERALL WORKSHOP (COLUMN) MEANS						
1. Before workshop		04.36	02.63	02.01	03.10	2.20
2. After workshop		04.50	03.90	03.77	03.97	3.90
3. Percent Change		+4.20	+49.0	+88.7	+32.0	+61.50

RESOURCES CONTRIBUTED TO PROJECT

Arizona Department of Agriculture. Jennifer Weber, Pesticide Safety Field Consultant, Phoenix , AZ contributed $8914.00 of salary as an instructor, test administrator and pesticide safety training materials specialist.

Dine College. Benita Litson, Director, Land Grant Office, Dine College, Tsaile, AZ contributed staff time, expertise, materials and equipment to develop posters and public announcements for the Navaho Nation people who needed training to become certified pesticide applicators. During the Northeast Arizona workshop, Dine Land Grant Office provided a classroom and lunch for trainees and instructors.

U.S. Forest Service Rocky Mountain Research Station-Flagstaff. A classroom was provided at no charge for the north central Arizona pesticide applicator workshop.

Southwest Vegetation Management Association. SWVMA provided a conference room at the Francisco Grande Hotel at a cost of $397.18 for the central Arizona applicator workshop training session.

APPENDIX 1.

Sample COURSE OUTLINE:

PESTICIDE APPLICATOR CERTIFICATION TRAINING AND CEU WORKSHOP 10 Sept. 2009 –Flagstaff, AZ

---The following topics are those contained in the National Pesticide Applicator Certification Core Manual found at www.nasda.org/workersafety /

---Chapter designations indicate the pages where topics are found in the national manual.

---Instructors: Jennifer Weber, Ariz. Dept. of Agriculture; Ed Northam, Jeff Schalau and Kai Umeda, Univ. of Ariz. Cooperative Extension.

8:00 am to 10:00 am

Pest Management. --- Chapter 1 Jeff Schalau
- Pest Control Introduction
- Pest Management Methods
- Integrated Pest Management (IPM)

Pesticide Laws Chapter 2 Ed Northam
- Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- Pesticide Registration and Reregistration
- FIFRA Violations
- Other Regulatory Laws
- Record-Keeping Requirements

Pesticide Labels and Material Safety Data Sheets Chapter 3 Jeff Schalau
- Documentation of a Pesticide Approval and Registration by EPA
- Components of a label
- Restricted Entry Intervals (REI)
- Components of the MSDS

Pesticide Formulations. --- Chapter4 Kai Umeda
- Liquid Formulations
- Dry Formulations
- Other Formulations
- Adjuvants

10:30 am to 11:30 am

Health, Safety and Personal Proptective Equipm. --- chapters 5 & 6 Jennifer Weber

Toxicity -- Exposure -- Hazards
Product Toxicity - Signal Words
Symptoms and First Aid for Pesticide Poisoning and Heat Stress
Protective Clothing, Eye Protection and Respiratory Protection

11:30 am to 12:30 pm LUNCH

12:30 pm to 1:30 pm

Pesticides And The Environment. --- chapters 7 & 9 Jennifer Weber

Pesticide Physical Characteristics
Pesticide Movement and Drift
Water Contamination
Sensitive Sites and Non-Target Organisms

1:30 pm to 3:00 pm

Mixing Loading & Applying Pesticides & Sprayer Calibration). --- chpts. 10-11 Ed Northam and Kai Umeda

Application Equipment
Equipment Calibration
Calculating Areas To Be Treated
Calculating Application Rate
Safe Mixing and Loading
Minimizing Drift
Cleaning and Disposal
Backpack sprayers will be used to illustrate calibration.

3:30 pm to 5:00 pm

Instructor: Jennifer Weber
Assistants: Ed Northam and Kai Umeda

NATIONAL CORE APPLICATOR EXAM