

Midwest School IPM Workshop Notes: March 24, 2004

IPM in Schools: Federal Funding

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1. EPA's Mission

- a. To protect children's health from unnecessary exposure to pesticides that are used in their schools to control pests.
- b. EPA encourages schools to adopt Integrated Pest Management (IPM) practices to reduce children's exposure to pesticides.

2. Funding is Essential for State-Wide School IPM Initiation

- a. States (SLA/CES/Health) need new funds to lead new programs
- b. Advocates and Pest Management Professionals (PMP) need funds to participate in State-lead programs
- c. Individual schools are motivated too with promise of some funding or at least outside assistance

3. Funding is Important for School IPM Implementation

- a. Funding is the primary need for State involvement; even implementation of State IPM legislation is difficult or impossible without additional funds
- b. Participation by advocacy groups is entirely dependent on outside funding

4. Potential Funding Sources: School IPM Implementation

- a. Schools may be persuaded to change pest control practices w/o exterior funding if IPM costs no more or less
- b. Few States have additional sources of revenue for IPM, even before 9/11, especially for new, untested programs in their State (even if proven successful elsewhere)

5. Federal (EPA) Funding for School IPM – a Perfect Match

- a. Children's Health Protection has a long-term history of Priority for EPA (lead, asbestos, etc)
- b. EPA funding ideally matches a need for start-up environmental programs; most EPA grant sources do not fund long-term continuing programs
- c. EPA support of projects through funding leads to the acceptance of new projects by schools and the community
- d. Successful EPA Funded projects can then be leveraged by State, industry, & advocacy groups to petition schools boards, state agency managers, and politicians for more permanent funding

6. EPA Funding Limitations for School IPM Projects

- a. In absence of federal legislation, EPA does NOT have any federal funds specifically designated for School IPM
- b. Nevertheless, EPA annually and regularly solicits for grant proposals from States and non-profits in areas of environmental health protection – school IPM matches well with many of these.
- c. EPA does not favor federal legislation because each state would be burdened to conform to these regulations.

7. Potential EPA Funding of IPM

- a. Many School IPM Projects can be funded through several different environmental statutes that pertain to:
 - (1) pesticides
 - (2) pollution prevention
 - (3) indoor air
 - (4) environmental education
 - (5) environmental justice
 - (6) children health protection
- b. This is a composite approach, where school IPM is just one component of the whole proposal.

8. EPA Funding of School IPM Projects

- a. Burden of seeking funds from EPA for School IPM rests on person/agency needing funds to EXPLORE ALL POSSIBILITIES
- b. Role of EPA are to appropriate funds for pre-designated funding avenues, write & advertise grant solicitations, review grants submitted, & manage grants

9. School IPM Funding EPA Region Roles

- a. Obtain consensus within Pesticides Section/ Branch/Division that school IPM is a priority – get their “buy-in”
- b. Designate staff specialist for School IPM (duties in job performance standards)
 - (1) provide tech support (Entomologist preferred)
 - (2) maintain regular communications w/ all key State players (SLA, CES, schools, advocate, PMP, State pest management association)
 - (3) review grant proposals & involved in Region funding decisions
 - (4) proactive to connect w/all potential EPA funding sources (pollution prevention, air,child,etc)
 - (5) offer to key grant managers service to review pesticide related grants
 - (6) participate in State workgroups, workshop speakers, pilots
 - (7) maintain connections w/OPP Sherry Glick
- c. Solicit school IPM projects from SLA’s as discretionary grants under cooperative agreement (in annual regional grant guidance) - - non competitive, need to get region and state to buy-in.
- d. Keep school IPM on forefront of states – regular topic at pre-SFIREG meetings
- e. Promote sharing of knowledge, successes, & resources
- f. Set aside travel for EPA involvement

10. Limitations to EPA Region Involvement in IPM

- a. Lack of a federal law

- b. Lack of specific federal funds
- c. Lack of management support or interest
- d. Conflicting workloads & priorities
- e. Staff turn-over (lateral moves within EPA)
- f. Inexperienced IPM technical specialist

11. School IPM Funding State/Non-Profit Roles

KNOW YOUR EPA SCHOOL IPM CONTACT - Be their best friend

- a. Internally agree IPM is priority in own agency & obtain management buy-in
- b. Designate School IPM specialist w/job duties & travel expense account
- c. Partnerships are vital w/all players
- d. Take lead for state School IPM Workgroup
- e. Submit IPM grant proposals to EPA via cooperative agreement grant discretionary (prioritize)
- f. Keep up with other EPA funding opportunities
- g. Keep School IPM in forefront of EPA Region
- h. Maintain regular communications w/Region
- i. Provide EPA w/regular updates on progress
- j. Invite EPA to all IPM events

12. Potential Federal Funding from EPA Region Pesticide Sections

- a. Pesticide Cooperative Agreement (STAG) Discretionary grants (Regions vary how these monies are competed & awarded) – available only to state lead agencies; usually non-competitive
- b. Pesticide Environmental Stewardship Program (PESP) grants (competitive, 1/Region & maybe 1 additional)
- c. OPP Urban Initiative (EPM) funds (R5 had \$94,000 in '00 to \$87,000 in '03)
- d. Other Regional set-aside (STAG) funds

13. Potential Federal Funding Sources in EPA Regions

- a. Environmental Education (EE)
- b. Environmental Justice (EJ)
- c. Pollution Prevention Incentives
- d. Pollution Prevention Demo Grants
- e. Air Division (Indoor Air Quality)
- f. Children's Health

14. Potential Federal Funding National Solicitations

- a. EPA Office Pesticide Programs
- b. National Foundation for IPM Education (PESP) [www.ipm-education.org/]
- c. National Pest Management Association
- d. Pest Management Foundation [www.pestworld.org/]
- e. Other Federal Grants (besides EPA)
 - (1) [www.grants.gov/ & www.fedgrants.gov/]

15. EPA Federal Funding Grant Variables –what EPA looks for in a great application

- a. Eligible applicants (State only or non-profit)
- b. Amount of money available

- c. Competition requirements
- d. Solicitation date
- e. RFP deadline
- f. Funding source & grant management
- g. Match requirements

16. Flexibility of Funding School IPM Grants

- a. If regulations & funding sources limit applicant only to State agency.....
- b. Non-profits & others may still receive funds as “pass-through” from the primary
- c. grantee (State) with their approval
- d. Projects can be tied to cooperative agreement (1 yr duration) or awarded as separate project grant (multi-year)

17. Variety School IPM Projects funded by EPA Region 5

- a. State-wide School Pesticide Use Surveys (IL,IN, WI)
- b. State personnel employment (IL, WI)
- c. Development of IPM Manual (IL, WI)
- d. School IPM Workshops for school sanitarians (indoor & outdoor separately) (all 6 States)
- e. School IPM Workshops for PMPs (IL, WI)
- f. Pilot School IPM Demonstrations (IN,MI,OH)
- g. School IPM video (IL)
- h. School Administrator Environmental Assessment Software (Region-wide)
- i. IPM Product/Services Guide for Schools (IL)
- j. School Classroom IPM Curricula (MI, MN)
- k. Multi-State Regional School IPM Research Center (IL&IN)

18. EPA Review of Grant Proposals

- a. Complete application that meets format requirements (pay attention to RFP details) – application eliminated from consideration by non-scientific reviewers when details are not met.
- b. Contents to include:
 - (1) Summary
 - (2) Background
 - (3) Proposal description
 - (4) Evaluation
 - (5) Budget
 - (6) Resume & Letters of Support
- c. Demonstrate need
- d. Clearly relate project to stated grant’s priorities (focus areas)
- e. Identify target audiences
- f. Show partnerships
- g. Detail goals & specific accomplishment
- h. Show wide-spread applicability of results (within State)
- i. Dissemination of results outside of State
- j. Build in measures of success
- k. Build in frequent reporting to EPA

- l. Identify all project participants & roles
- m. Prove competency to implement grant
- n. Provide timeline of expected outcomes
- o. Budget realistic for work (not >\$40,000) - \$30K is generally the top amount
- p. In-kind contribution (match); low indirect – show all kind of n-kind matches, the lower indirect the better.

19. School IPM Grant Resources

- a. EPA Region 7 table of grant resources
[www.epa.gov/Region7/economics/index.htm]
- b. EPA R7 Funding Applications [www.epa.gov/Region7/economics/apply.htm]
- c. EPA Application Kit [www.epa.gov/ogd/]
- d. EPA R5 grant writing tutorial [www.epa.gov/seahome/]
- e. One-stop shopping for all Federal grants [www.grants.gov/]

20. For More Information...

- a. Donald Baumgartner
Pesticides Program Section
U.S. Environmental Protection Agency
77 West Jackson Blvd.
Chicago, IL 60604
312-886-7835
Baumgartner.donald@epa.gov
- b. Or consult your EPA Region School IPM Specialist
Web Site <http://www.epa.gov/pesticides/ipm/ipmcontacts.htm>
1-800-858-7378 (toll-free) NPIC

Training Schools to Do IPM
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1. School IPM Adoption: Two Models

- a. Pilot programs
 - (1). Put intensive effort into developing pilot programs in one or a few schools and hope other schools will notice
 - (2). Monroe Model
- b. Interactive Assistance
 - (1). Provide regular training opportunities for schools
 - (2). Be available for consultation, site visits
 - (3). Texas Model – pilot program was not practical

2. Interactive Assistance

- a. Workshops – first day explaining the state law; second day on specialty topic for school IPM
 - (1). Regional workshops – involve 10 – 20 different school districts at each workshop.
 - (2). Requested workshops
- b. Newsletter, hotline
- c. Site visits
- d. Inspector referrals

3. IPM Pride Award

- a. Tri-state award program
 - (1). Texas, Oklahoma, NM
- b. \$1,000 and \$500 cash award
- c. Local, state, national recognition
- d. Honorable mentions
- e. Underwritten by Responsible Industry for a Sound Environment (RISE)

4. Teaching IPM: Components of IPM

- a. Pest identification
- b. Knowledge of pest biology
- c. Monitoring and thresholds
- d. Integrated controls
- e. Communication/cooperation with stakeholders

5. Pest Identification – critical to solving each pest problem

6. Knowledge of pest biology

- a. Life cycle
- b. Breeding habits
- c. Favored habitats
- d. Behavior
- e. Pest status

7. Pest Triangle

- a. Pests
- b. Harborage
- c. Food & water
- d. Other necessary environmental requirements

8. Monitoring and thresholds

- a. IPM inspection – A careful check conducted at a site looking for the presence of, or signs of, pests or conditions that might contribute to a pest infestation
- b. Monitoring – Periodic observation and recording of pest presence and abundance. Requires a minimum of 1 to 1 ½ hours...if a person spends less time, they are not doing a thorough job!
- c. Threshold – An unacceptable level of pest presence based on monitoring results

9. Monitoring should be:

- a. Quantitative
- b. Scheduled
- c. Seeking evidence of pests using visual inspections, traps, or other detection devices (illustration of a moisture meter)

10. Trapping – using UV light traps or glue board

11. Thresholds – each school must set their own levels

- a. Unacceptable pest level – contrary to reports, pest threshold is not zero in the urban environment.
- b. May be based on economics, aesthetics, or past experience
- c. Every pest has a threshold
 - (1). e.g., one roach per ten traps; two fire ant mounds per playing field; two complaints per school
- d. Site/district specific

12. Integrated controls

- a. Integrate – verb, to bring together or incorporate (parts) into a whole
- b. In IPM, refers to integration of available control tactics such as sanitation, cultural methods, biological methods and chemical insecticides

13. The IPM pyramid

- a. pesticides tip of pyramid
- b. physical/mechanical controls
- c. biological controls
- d. cultural/sanitation –base of pyramid

14. The IPM Process – should be dynamic

- a. Conduct an inspection
- b. Identify the pests
- c. Take corrective or preventive action
- d. Establish ongoing evaluation

15. IPM Plans – 1 to 3 pages for each pest

- a. Quick reference resource for schools
- b. Organized by situation
- c. Suggested thresholds
- d. Non-chemical and preferred chemical treatments listed first

16. German cockroach - *Blattella germanica*

- a. Most prolific of all cockroaches: 30 to 40 eggs per ootheca and 2 month development time
- b. Found only indoors
- c. Public health threat
 - (1) Germ transport
 - (2) Allergen production

17. Key biology points for German Cockroaches

- a. Egg case, nymph, adult stages
- b. Maximum growth rate at 33 degrees C (91 degrees F), preferred temps 75 – 90 degrees F
- c. Spend most time in cracks (1 to 4 mm-wide)
- d. Found mostly in close proximity to food, water and harborage

18. Effective controls for German Cockroaches

- a. Caulk and seal harborages
- b. Eliminate, reduce, separate water and food resources
- c. Bait and dust harborage areas identified by sticky traps
- d. Apply residual sprays to harborages

19. Second Day of School IPM Training: Workshop Topics – focus areas

- a. 2002 – IPM for cockroaches, rodents, fire ants
- b. 2003 – Landscape IPM, insects as indicators of mold, tree hazards
- c. 2004 – Termites, ant identification
- d. Four workshops at regional level per year. Current charges are \$50 per day per person or \$75 for two days per person. For the school district hosting the regional training, you need to provide two to three free registrations.

School Landscape IPM: Insect Pests

**Mark H. Shour
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1. Natural vs. human-designed...Each landscape is a unique mini-ecosystem of abiotic and biotic factors

- a. Natural landscapes are self-sustaining, diverse, and resilient
- b. Human-designed landscapes are dependent and simplistic
- c. Are at a greater risk for fluctuations in pest problems

2. When faced with a pest you have 4 choices:

- a. Ignore it
- b. Tolerate it
- c. Nuke it
- d. Manage it

3. What is IPM?

A decision-making tool using cultural, physical, biological, & chemical pest management strategies to prevent damaging pest outbreaks while reducing the risks to human health & the environment

4. Why use IPM?

- a. Improve quality of plant care
- b. Minimize pesticide use
- c. Identify most important pests
- d. Focus management efforts

5. Landscape IPM components

- a. Key plants
- b. Key pests
- c. Decision levels
- d. Monitoring
- e. Record keeping
- f. Management strategies
- g. Evaluation

6. Key plants – first definition

- a. Plants that provide aesthetic or functional attributes to the landscape
 - (1) Hedge on edge of playground
 - (2) Shade trees on south side of building
 - (3) Focal point at main entrance

7. Key plants – second definition

- a. Pest-prone plants or plants routinely under stress
 - (1) Turfgrasses
 - (2) Crabapple trees
 - (3) Euonymus groundcover

8. Key plants

- a. Map target areas, including abiotic items
- b. Develop species codes
- c. Number each plant
- d. Put key plants on the landscape map

9. Key pests

- a. Anticipated pests each season based on plant species present
- b. Generalists: feed on many hosts
- c. Specialists: specific plants
- d. Opportunists: problem on stressed plants

10. Insect pests with chewing mouthparts

- a. Beetles
- b. Caterpillars
- c. Sawfly larvae
- d. Grasshoppers

11. Insect pests with piercing-sucking mouthparts

- a. Aphids
- b. Scales
- c. Psyllids
- d. Mealybugs
- e. Spittle bugs
- f. Plant bugs
- g. Whiteflies
- h. Planthoppers
- i. Leafhoppers
- j. Treehoppers
- k. Lacebugs
- l. Stinkbugs
- m. Thrips
- n. Mites

10. Insect pests causing plant distortion

- a. Cicadas
- b. Gall makers
- c. Leafminers

11. Correct identification is key to solving pest problems.

12. Decision levels – how many pests are too many?

13. Economic Injury Level - Used in agriculture since 1959

a. Determining when pest population increases to the level that their control is justified to protect the crop's profits

14. Economic injury on school grounds...

- a. Plant mortality
- b. Unsafe conditions
 - (1) Loose, bumpy turf
 - (2) Hazard trees

15. Aesthetic Injury Level

the pest density capable of causing enough damage to the appearance of the plant to justify the use of one or more management strategies.

16. Aesthetic injury on school grounds...

- a. Less than desired appearance (internal)
- b. Complaints about appearance (external)

17. Why Monitor for Insect Landscape Pests?

- a. Yearly occurrence of pests varies
- b. Pests with multiple generations
- c. Gain information on presence & activity of natural enemies
- d. Proper timing for management efforts
- e. Downside of monitoring
- f. Labor intensive
- g. Knowledge intensive

18. Monitoring approaches

- a. Visual inspection of plants
- b. Use passive trapping devices
- c. Heat accumulation indices
- d. Phenological indicators

19. Management Strategies for Landscape Pests

- a. Prevention
- b. Mechanical control
- c. Biological control
- d. Curative pesticide
- e. Preventive pesticide

20. Prevention Strategies

a. Cultural Controls

- (1) Plant the right species for the site
- (2) Selection based on host tolerance, resistance to pests
- (3) Healthy plants- watering, prescriptive fertilization
- (4) Correct use of mulch
- (5) Corrective pruning

21. Pros & Cons: Prevention

a. Pros:

- (1) Reduced insecticide use
- (2) Decreased incidence of pests

b. Cons:

- (1) Planning prior to planting
- (2) Required tolerance of pests
- (3) Labor intensive

c. Example of pest requiring preventative management is the Bronze Birch Borer

22. Mechanical Strategies

a. Water washes

b. Protective netting

c. Handpicking

d. Prune off small clusters

23. Pros & Cons: Mechanical

a. Pros

- (1) Reduced insecticide use

b. Cons:

- (1) Timely discovery
- (2) Labor intensive
- (3) Not possible for all pests, plants

c. Examples of pests responding to mechanical management strategies:

- (1) Spruce Spider Mite
- (2) Japanese Beetle

24. Biological Control

a. Using a pest's natural enemies to control the pest

b. Need to be able to recognize pest and beneficial insects

25. Biological Control Strategies

a. Conserve natural enemies

- (1) Identify beneficials present
- (2) Decrease pesticide use
- (3) Plant species to attract

b. Augment natural populations with new introductions

- c. Sprays of biological agents
 - (1) BT
 - (2) Viruses

26. Pros & Cons: BioControl

- a. Pros:
 - (1) Nature handles pest problem
 - (2) Selective
 - (3) Long-lived
- b. Cons:
 - (1) Delayed or reduced control
 - (2) Knowledge intensive
 - (3) Careful choice of pesticides
- c. Examples of pests responding to curative pesticide applications:
 - (1) yellow necked caterpillar
 - (2) pine needle scale

27. Curative Pesticide Application

- a. Judicious pesticide use against vulnerable stage of pest
- b. Predetermined threshold values met
- c. Use of IPM aids for timing
- d. Use biorational pesticides first (soap, oils, Neem, Conserve)
- e. Use “traditional” pesticide (Astro, Mavrik, Sevin, Talstar)

28. Pros & Cons: Curative Sprays

- a. Pros:
 - (1) Use only if needed
 - (2) Spot treatments possible
 - (3) Reduced insecticide use
- b. Cons:
 - (1) Timely, thorough monitoring
 - (2) Late discovery = disaster
 - (3) Some pests, damage must be tolerated
- c. Examples of pests responding to curative pesticide applications:
 - (1) yellow necked caterpillar
 - (2) pine needle scale

29. Preventive Pesticide Application

- a. Judicious pesticide use against anticipated pest
- b. Pesticide applied in plenty of time to be active when and if pest population develops
- c. Use of contact or systemic products with longer residual

30. Pros & Cons: Preventive Spray

a. Pros:

- (1) Protection of high value sites
- (2) Less reliance on monitoring

b. Cons:

- (1) Treatment prior to problem
- (2) Wall to wall application
- (3) Greatest insecticide use

c. Examples of pests responding to curative pesticide applications:

- (1) Birch Leaf miner
- (2) Bronze birch borer

31. School Landscape IPM

a. Not high budget priority

b. Improve ornamental function, beauty, & safety

c. Communicate w/ specialists, develop knowledge base

d. Excellent community project

32. PESP Landscape Pilot Program

a. 5 schools in Iowa

b. 2004 and 2005 seasons

c. Identify ornamentals

d. Identify plant needs

e. Examine current landscape pest management efforts

f. Turfgrass component

IPM for Athletic Fields
Dave Minner
Iowa State University
www.turfgrass.hort.iastate.edu

1. www.sportsmanager.org
2. **US Athletic Field Industry**
 - a. Over US\$11 billion
 - b. 2.8 million hectares managed fields
 - c. 170,000 field management employees
 - d. Iowa Sports Manager Association
3. **Athletic Field Management** – watering, mowing, fertility, seeding, pest control, topdressing, divot mix re-establishment, growth regulators, covers
4. **Expectations** – is the field safe for all ages
5. **Playability/ Performance**
6. **Sport Type = Traffic Type**
 - a. Football vs. Soccer
7. **Safe Fields for all ages**
8. **Athletic field reality**
9. **Mowing**
 - a. More frequent = more density and faster recovery
 - b. Height too low then roots are shallow and surface tears easily.
 - c. Height too high – decreases density and recovery is diminished
 - d. Select the height for playing conditions and stay there!
10. **Fertility**
 - a. Promote active growth for turf recovery
 - b. Balance nitrogen and potassium
 - c. Phosphorus to promote the spread of runners in Bermuda grasses
 - d. Sand fields need more frequent application of N, P, K micros, humic acid and seaweed
11. **Watering for better wear tolerance**
 - a. Avoid the temptation to over irrigate
 - (1) Deep and infrequent builds better roots
 - (2) Learn to read the plant, look for beneficial wilting
 - (3) Slightly dry soils produce better roots and thicker leaf cuticles that translate into more wear resistant tissue.
12. **Water only when the plants tell you**

13. Footprints = beneficial wilt

14. Can you play during and after the rain?

15. Traffic control – field orientation

16. Band practice field

17. Cultivation and Topdressing

- a. Be aggressive! Coring, spiking, slicing, shattering and hydro-jet are all beneficial
- b. Deep cultivation absolutely
- c. Sand and other amendments to loosen the surface and create better penetration “will not make concrete”

18. Crumb Rubber

- a. 10/20 mesh
- b. Bulk density - 25 lbs/cu ft (400 kg/cu meter or .4 g/cc).
- c. Target application - .5 to .75 inches or 1038 to 1550 lbs/1000sqft (13 to 19 mm or 5 to 7.5 kg/sq meter)

19. Mix Sand by Aerification

	<u>Start</u>	<u>Target</u>
Silt and clay	70%	25%
Sand	30%	75%

- a. Add 1.5 inches of top-dress sand.
- b. 5 passes over field (25% area) with 3/4-inch hollow tines on 3-inch centers.

20. Grass Re-establishment Strategy

- a. Seed often and at higher rates... some dies but some also survives. You are not wasting \$.
- b. Seedlings that survive in the fall are the building blocks for the beginning of next season (mid-Aug).
- c. Seed anytime the soil is exposed or you anticipate heavy traffic and loss of turf cover.
- d. Seeding strategies
 - (1) Pre-germinated divot mix
 - (2) Seed before game and “cleat-in” seed
 - (3) Dormant seeding
 - (4) Multiple layer seeding, broadcast + spike, drill, core/ topdress/ seed/ drag
 - (5) Seed more often... 6 to 10 times per year

21. Multiple Seeding - Number of seedings per year

- a. Number of different techniques used
 - (1) Seed into aerifier holes

- (2) Drill seed
- (3) Broadcast seed and top dress

22. Pre-germinate seed

- a. Leave seed in bags
- b. Soak 12 hours
- c. Drain 12 hours
- d. Soak 12 hours
- e. Drain and open bags
- f. Make divot mix with sand, turface and bioflex

23. Without Pre-germination - Requires Extra Watering

- a. "Cleating" in seed
- b. IOWA-NEBRASKA-KANSAS
 - (1). You get the field in May – practice starts in mid- August!

24. Grow cover: evergreen covermaster

- a. Grass re-establishment strategy
 - (1) Sod when possible... it's 18 months more mature
 - (2) Budget for sod in high use areas
 - (3) Small areas sod each year i.e. soccer goals, mounds.
 - (4) Larger areas center of soccer and football fields re-sod 20,000 sq. ft. every 3 years.

25. Budget for sod each year

- a. Mature sod more traffic tolerant than seedling turf

26. White Grub IPM Strategy

- a. Current thinking
 - (1) Fear of turf loss at start of season
 - (2) Preventative insecticide

27. White Grub IPM Strategy

- a. Fear of turf loss at start of season
- b. Preventative insecticide
- c. Scout in late July/August
- d. Apply insecticide based on population

28. Crabgrass IPM Strategy

- a. Current thinking
 - (1) Pre-emergent herbicide yearly
 - (2) Pre-emergent herbicide yearly
 - (3) Drive post-emergent herbicide if needed
 - (4) Multiple and heavy seeding rates

29. Disease IPM Strategy

- a. Current thinking
 - (1) Preventive program – apply every month
 - (2) Fungicide used as substitute for a knowledgeable grounds manager

30. Disease IPM Strategy

- a. Preventative program – apply every month
- b. Fungicide used as substitute for a knowledgeable grounds manager
- c. Use local Golf Course Superintendent
- d. Eliminate preventative fungicide program

Program Evaluation: Quantifying Outcomes

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March 24, 2004

- 1. Evaluation** - determining the worth of a program
- 2. Program Evaluation: A Mandate**
 - b. Government Performance and Results Act (GPRA)
 - (1) 1993
 - (2) Requires strategic plans and numerical assessments
 - (3) Requires accountability in government organizations
- 3. Steps Involved**
 - a. Know context
 - b. Determine use and purpose
 - c. Identify focus
 - d. Design measurement tool
 - e. Collect evidence
 - f. Analyze and interpret data
 - g. Report results
- 4. Stages of Evaluation**
 - a. Formative Evaluation
 - b. Process Evaluation
 - c. Impact Evaluation
 - d. Outcome Evaluation
- 5. Formative Evaluation**
 - a. Purpose -ensures program materials are of highest quality
 - b. When to Conduct - should be conducted when new program is being developed or existing program is being modified
- 6. Process Evaluation**
 - a. Purpose
 - (1) Is program reaching intended audience?
 - (2) Pretest and posttest are very important for impact evaluation
 - b. When to Conduct
 - (1) Should begin as soon as program is put into action

7. Impact Evaluation

- a. Purpose - to learn about target population's changes in knowledge, attitudes, and beliefs. (All of the interested groups need to be communicated regularly throughout the process)
- b. When to Conduct
 - (1) Take baseline measurements
 - (2) Measure after first encounter

8. Outcome Evaluation

- a. Purpose - to measure outcome of program
- b. When to Conduct
 - (1) At completion of termed project
 - (2) When will be meaningful for ongoing program
 - (3) Results

9. Measuring Level of Impact - Bennett's Hierarchy of Evidence

- a. Impacts at higher levels of hierarchy demonstrate greater accountability

10. Level of Measurement Pyramid

- a. Outcomes – tip of pyramid
- b. Practices of change
- c. Amount of Learning
- d. Reactions
- e. Participation
- f. Activities
- g. Inputs – base of pyramid

11. Level of Measurement

- a. Inputs
 - (1) Examples:
 - (a) Time preparing materials
 - (b) Costs of printing/distribution
- b. Activities
 - (1) Examples:
 - (a) Number of meetings
- c. Participation
 - (1) Examples:
 - (a) Attendance at meetings
- d. Reactions
 - (2) Examples:
 - (a) Reactions about course materials
 - (b) Reactions about program
 - (c) Can first get pros then cons. Are you on the right track?

- e. Amount of Learning
 - (1) Example
 - (2) Knowledge about School IPM Program
 - (a) How much was learned (measuring behavior change)
 - (b) Pretest –post-test
- c. Practice Change/Program Impacts
 - (1) Economic, Environmental, Health
 - (2) Examples
 - (a) Adopt School IPM practices
- d. Outcomes/Program Impacts
 - (1) Economic, Environmental, Health
 - (2) Example
 - (a) Successful adoption of School IPM in entire district or state

12. Steps Involved

- a. Know context
- b. Determine use and purpose
- c. Identify focus
- d. Design measurement tool
- e. Collect evidence
- f. Analyze and interpret data
- g. Report results

13. Data Collection Methods

- a. Existing records – (need administrators to keep very good records)
- b. Observations
- c. Focus groups
- d. End of meeting questionnaires
- e. Mailed questionnaires (\$5 to \$7 per survey)
- f. Telephone surveys (\$10 per survey)
- g. Face to face interviews

14. Tips for Questionnaires

- a. Make sure instrument looks professional
 - (1) Illustration on cover of survey instrument
 - (2) Handwritten signature on cover letter (hand-signed signatures make a difference)
- b. Put demographic questions at end of survey
 - (1) Age, gender, income, etc (people do not like questions about age so put them at the end)

- c. Scales
 - (1) Try to make scales consistent

(a). Likert Scales

- Try to have at least five categories
 - Must have positive and negative items of equal value
 - SD, D, U, A, SA
- d. Make sure question is asking only one item
- (1) As a result of this program, will you thoroughly clean grain storage units prior to beginning new crop grain and avoid putting new crop grain atop old crop grain?
- (2) As a result of today's training, will you use a wind meter, reduce sprayer pressure or increase nozzle size to reduce drift?
- e. Shorten, shorten, shorten!

15. Institutional Review Board (IRB)

- a. 1946-1949: Nuremberg Code
- b. 1964: Declaration of Helsinki
- c. 1974: National Research Act
- d. 2001 Code of Federal Regulations: 45 CFR 46
- e. IRB or Human Subjects
- f. "The proposed research design of a University faculty, staff, or student must be reviewed by the IRB. The Iowa State University IRB is charged with reviewing plans that protect your participants. The IRB ensures that human subjects do not bear any inappropriate risk and have properly consented to their involvement."
- g. IRB has powers – can keep your research from being published and they can withhold from research funding.

16. Collecting Data

- a. Sallant and Dillman (1994)
 - (1) Personalized, advance notice letter (optional)
 - (2) Personalized cover letter, survey instrument, return envelope
 - (3) Follow-up postcard
 - (4) Personalized cover letter, survey instrument, return envelope

17. Steps Involved

- a. Know context
- b. Determine use and purpose
- c. Identify focus
- d. Design measurement tool
- e. Collect evidence – do web search. "Determine sample size". Need to know confidence interval and standard error you desire.
- f. Analyze and interpret data
- g. Report results

18. Analyzing Data

- a. Develop a plan (keep the review board in a good mood, your survey has to be reviewed- can hold your funding or keep your research from being funded)
- b. Analysis depends on level of data
 - (1) Nominal, ordinal, interval
 - (2) Description, correlation, comparisons
- c. SPSS
 - (1) Statistical software packaged.

19. Reporting Results

- a. Description and analysis
- b. Interpretation
- c. Judgment
- d. Recommendations

20. Sources of Information

- a. Evaluation
 - (1) Bennett CF. March/April 1975. Up the Hierarchy. *Journal of Extension* 13(1) 7-12.
 - (2) Patton MQ. 1997. *Utilization-Focused Evaluation*. 3rd ed. Thousand Oaks, CA: Sage Publications. 430 p.
 - (3) Rossi PH. And Freeman, HE. 1993. *Evaluation: A Systematic Approach*. 5th ed. Newbury Park, CA: Sage Publications. 488 p.
 - (4) Seevers B., Graham D., Gamon J., Conklin K. 1997. *Education through Cooperative Extension*. Albany, NY: Delmar Publishers. 288 p.
- b. Collecting Data
 - (1) Salant P. and Dillman DA. 1994. *How to Conduct Your Own Survey*. New York, NY: John Wiley & Sons, Inc. 232 p.
- c. Analyzing Data
 - (1) Sproull, NL. 1995. *Handbook of Research Methods: A Guide for Practitioners and Students in the Social Sciences*. 2nd ed. Metuchen, NJ: The Scarecrow Press, Inc. 430 p.
- d. General
 - (1) Survey Researcher's Handbook by Alreck & Settle

Responding to Public Outcry
Mark R. Burns
Dubuque Community School District

1. Chicago Tribune

“City to clean 600 schools over rodent problems”

Headline found on the front page of the Chicago Tribune 1/23/2004 (Appendix A)

2. Overview

- a. Overview of the old pest management strategy
- b. Call for action
- c. IPM contact
- d. Training
- e. Board Policy, Action Plans
- f. What’s wrong with this picture?

3. Overview of old strategy

- a. Pests appeared
- b. Pest management company was contacted
- c. Pest management company sprayed
- d. Pests disappeared (in that area)
- e. Pests appeared (in other areas, or in that area a few weeks later)
- f. Re-start the cycle

4. Call for action

- a. The pest control company sprayed in the buildings (when people were around)
- b. Teachers complained to administration
- c. Teachers complained to the school board
- d. Parents raised concerns
- e. Parent e-mail to a board member (Appendix B)

5. IPM Contact (Appendix C)

- a. Jim Brimmer, DCSD Buildings and Grounds contacted Mark Shour and Carol Pilcher, ISU, to discuss problems and solutions
- b. Agreed to training plan for Dubuque schools to gain support from teachers, nurses and administrators

6. Training

- a. Invitations were extended to the following secondary people for a 2 day training to be held at Hempstead High School: Principal, FHACS Dep't Chair., Food Service, Head Custodian, Nurses, Jim Brimmer,
- b. Reaction to the 2 day ALL DAY training was apprehensive to negative:
 - (1) Do I really have time to devote to this?
 - (2) How is this going to help student achievement?
 - (3) The training was fantastic
 - (4) Informative
 - (5) Comprehensive
 - (6) Well received by attendees
 - (7) Started conversations among staff members
- c. Mark and Carol came back for a 1-day training session for all Head Custodians
- d. People are aware, but where do we go from here?

7. Board Policy, Action Plan

- a. Following our IPM Seminar, 8 people were selected to serve on a committee to develop policy
 - b. Quick memo was circulated at Hempstead following that meeting to clarify Hempstead's IPM position (Appendix D)
 - c. Policy was recommended to the superintendent and he recommended a policy to the school board
 - d. The School Board adopted the policy (Appendix E)
 - e. At Hempstead, we then developed a memo for the staff to reinforce, clarify and outline expectations (Appendix F)
 - f. We worked with staff to clarify questions
 - g. We scheduled a walk through for the day after the teachers' last contract day
 - h. Worked with Head Custodian to answer questions. Wanted a unified message
 - i. Teachers cleaned
 - j. Teachers organized
 - k. Teachers asked questions and became better informed
 - l. The Custodians scheduled extra trash pickups
 - m. We conducted a building walk through (Appendix G) (Jim Brimmer, Asst. Mgr Buildings/Grounds; Tom Biver, Head Custodian; Mark Burns, Asst. Principal; David Olson, Principal)
 - (1) Recommendations were made to departments
- Board Policy, Action Plan
- (2) Superintendent's welcome back letter addressed our commitment to IPM (Appendix H)
 - (3) The local paper ran an article about IPM to better educate parents, students and staff

8. “Schools bid to expel bugs”

- a. Headline from the August 17, 2003 Telegraph Herald, Appendix I

9. Board Policy, Action Plan

- a. Developed a reporting system.
- b. Developed a tracking system for the reporting system. (Excel spreadsheet Appendix J)
- c. WE'RE KEEPING STATISTICS!
- d. Hired a new pest management company that has IPM experience.

10. WE STILL HAVE A LONG WAY TO GO, BUT PROGRESS HAS BEEN MADE!

11. What's wrong with this picture?

- a. It takes 21 consecutive days to change a habit
- b. Showed 25 pictures illustrating problems found in our school

12. Action Plan

- a. Maintain momentum by following up with IPM audits periodically.
- b. We (teachers, administrators, custodians, etc.) are creatures of habit and habits need to be re-shaped. In order to re-shape our habits, we need reminders.
- c. Stay committed to your IPM plan.

13. Contact

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