

Integrated Pest Management (IPM) in Schools



Dr. Tess Grasswitz
New Mexico State University
Los Lunas

IPM in Schools

1. Pests in schools – what is the problem?
2. What is IPM?
3. IPM – how it works: some examples



Pests in schools – what is the problem?

Liability:



Published: Friday, 12th March, 2010 12:44pm

Schools plagued by pests

PEST control companies are being run off their feet in a bid to keep plagued Border schools vermin free.

Reports of rats, mice and wasps are on the rise in classrooms across the region.

Statistics released under the Freedom of Information act show extermination experts have visited the region's schools an incredible 184 times in the past two years.

Everything from rats to slugs and silverfish have been found in the schools - with moles, wasps and ants also making unwelcome appearances.



Pests in schools – what is the problem?

Pests & pesticides:

- can cause health issues
- can spread diseases
- or trigger asthma attacks:
- 4.8 million children nationally (up to 25%)
- 12.8 million school days lost per year
- reduces student achievement



Pest issues in schools – what is the problem?

Asthma triggers include:

- cockroach particles (cuticle, droppings, etc)
- fungal spores, dust mites
- rodent materials (dander, droppings, etc)
- some pesticides (especially aerosols)



Pests in schools – what is the problem?

Children are more vulnerable to pesticides & other toxins

- **developmentally**
- **behaviorally**

IPM in Schools

What is IPM?

“A multi-tactic approach to managing pests which focuses on long-term prevention or suppression with minimal impact on human health, the environment and non-target organisms.”

Chemical controls are used only as a last resort
...and should be the least toxic options

IPM in schools

The vision of IPM:

→ Healthier environment

→ Healthier children (and adults!)

→ Improved performance/achievement

Results can be impressive:

70 – 90 % reductions in BOTH pest complaints...

... AND pesticide use

IPM: how it works

IPM

- Uses multiple tactics to avoid or suppress pests:
 - Cultural controls
 - prevention & avoidance
 - Monitoring & pest identification
 - treat the correct pest in the correct way
 - when (and only when) it's there
 - Chemical controls are used as a last resort...
...and should be the least toxic options

Cultural controls in school IPM

Basic principles:

- Pests need FOOD, WATER & SHELTER
- Cultural control prevents (or reduces) access to ALL 3

1. Shelter

- Exclude pests from buildings:
 - holes!



Cultural controls in school IPM

Holes!



Cultural controls in school IPM

Basic principles:

- Exclude pests from buildings:
 - door fitting
 - door sweeps



Cultural controls in school IPM

Basic principles:

- Exclude pests from buildings:
 - caulking
 - drains



Cultural controls in school IPM

Drains



Moth flies
(drain flies)



Cultural controls in school IPM

Excluding pests from buildings - Packaging



Cultural controls in school IPM

Excluding pests from buildings



Cultural controls in school IPM

Basic principles:

- Eliminate Food, Water and Shelter
- Trash

Dumpsters should be:

- away from entrances
- free of holes
- covered
- placed on cement
- emptied regularly
- never overflowing

Drain holes should be screened



Cultural controls in school IPM

Basic principles:

- Eliminate Food, Water and Shelter:
- Trash



Cultural controls in school IPM

Basic principles:

- Eliminate Food, Water and Shelter
- Trash

- Clutter



Cultural controls in school IPM

Basic principles:

- Eliminate pests' basic needs: Food



Cultural controls in school IPM

Basic principles:

- Eliminate pests' basic needs:
- Water



Pest Monitoring and Identification

Tells you what's there... and when

- the only way to justify a pesticide treatment



Traps:

Need to be checked regularly...

- map

- record

... and replace as needed

Put them in problem areas, NOT everywhere



Monitoring and pest identification



Get down and dirty!



Check behind those cushions....



Monitoring and pest identification



UV Flashlight



Floor under room light...



...and under UV light

Monitoring and pest identification



Behind the clock

Monitoring and pest identification



????



Monitoring rodent run with
double-sided sticky tape



Monitoring and pest identification

One pest may indicate the presence of another...

Found near
dead animals
(e.g. dead rats)



Blow fly



Hide beetle

Found near
grain or bait
hidden in walls



Meal moth



Grain beetle

Monitoring & pest reporting

Eliminates 'do-it-yourself' approaches



Monitoring and pest identification

Pest identification

- key component of IPM
- another learning opportunity



When pesticides are required...

- Use the safest possible option (e.g. low toxicity, baits, gels, etc)
- Least amount of product

Example: German cockroaches

- Like warm, humid, indoor areas
- Hides in cracks & crevices close to food & water

IPM approach:

- Eliminate access to food & water
- Seal cracks & crevices
- Change outside lights to yellow 'bug lights'

Example: German cockroaches

Monitor with sticky traps...



Traps can tell you a lot...

Actively growing populations are:

- 20% adults
- 80% nymphs (immature stages)

Example: German cockroaches

So how do you kill them?



Example: German cockroaches

If you need to treat...

- Use the least toxic option
- In the lowest effective amounts
→ Baits & gels



Placement:

- under sink counters
- where cupboard frame meets wall
- in cracks & crevices

Will be effective IF there is NO food source around!!



Example: German cockroaches



What's available?

Check 'NPIRS Public' (<http://state.ceris.purdue.edu/>)

Example: rats & mice



Why be concerned?

- Allergens/asthma
- Rat-bite fever/Haverhill fever:
 - chills, fever, vomiting, rash, etc.
- Other rodent-vectored diseases (e.g. Leptospirosis)
- Over 10,000 rat bites per year in the U.S.
- 12,000 – 15,000 rodenticide poisonings per year
- Fire hazard

Example: rats & mice

The IPM Approach:

- **Exclusion**

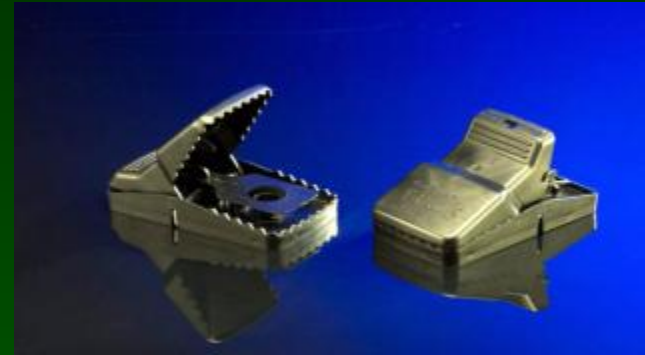
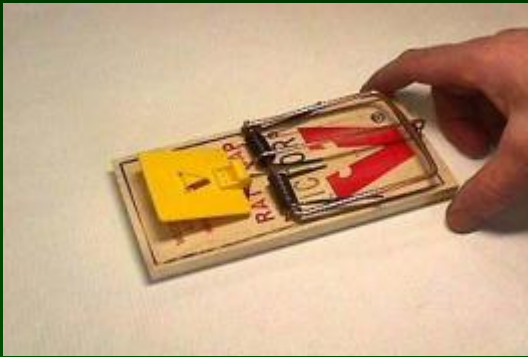
- Door thresholds
- Holes
- Cement/mortar
- Hardware cloth over ventilation openings (19+ gauge, ¼" or smaller mesh)
- wires/cables
- clear vegetation away from walls



- **Eliminate access to food, water, shelter, bedding material**

Example: rats & mice

Trapping



Advantages:

- cheap, re-usable, non-toxic, results are obvious

Correct placement & use is critical:

- along walls (look for signs)
- at 90° to wall
- 2 or 3 in a row
- 6-10 ft apart (mice)
- 20-30 ft apart (rats)



Example: rats & mice

Trapping (continued):

- Baiting (rats vs. mice, fresh bait)
- Change positions after approx. 10 days
- Used traps are more effective than new
- Avoid washing with soapy water
- Don't handle domestic animals before handling traps
- Store traps in chemical-free area
- Be very careful when removing dead rodents



Example: rats & mice

Glue boards



Rodenticides

- Many products available
- Must be registered for this purpose in your state
- Registrations change frequently
- READ and FOLLOW label directions: it's the LAW
- Risk to wildlife and pets (secondary poisoning)



Example: rats & mice

Rodenticides (continued)

- Bait stations:

- only where rodents have been found
- in locations not accessible to children, pets, or wildlife
- tamper-resistant
- secure & label





I'm telling you...that mouse was THIS big!!

IPM extends to the outside...

Grounds, playing fields, school gardens



What does it cost?

Initial investments:

- Time for training
- Pest-proofing buildings
- Monitoring supplies

Pay-offs:

- Long-term reduction in pest problems
- Reduced pesticide & application costs
- Reduced pest complaints
- Reduced absenteeism/improved health

What does it cost?



Start small:

- Implement in phases
- Concentrate on high-pest areas first (kitchens, etc)
 - build confidence & support

...And grow!

- Get the whole school involved:
 - Students, Teachers, Custodial Staff, Kitchen Staff, Principals, Superintendents, Pest Management Companies, Parents

Further information on school IPM:

[Pest Management Strategic Plan for Schools](#)



Contact details:



Dr. Tess Grasswitz
New Mexico State University
Los Lunas Agricultural Science Center,
1036 Miller Rd.,
Los Lunas, NM.

Tel.: (505) 865-7340

E-mail: tgrasswi@nmsu.edu