Demonstrations and partnering increase school IPM adoption in Tennessee

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Abstract
IPM adoption in Tennessee schools is slowly increasing. In 1997, indoor school IPM adoption was estimated at 12% (74% return) and in 2002, had reached 25% (36% return). In 2008, only 6.7% of school districts completed the online survey, but 54% of the schools were using high level IPM. A phone survey in 2011 validated the 2008 results. Roughly 65% of the school districts are using most (>70%) of the IPM practices queried about in the survey. Partnering with the Tennessee School Plant Management Association and using demonstrations funded by USDA-NIFA Coordinated Programs Extension IPM Grants has helped create awareness and increase adoption.

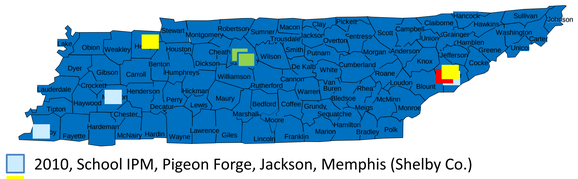
Intro. School IPM programs aim to reduce and balance risks from pests and pesticides to school occupants and the environment. Children spend considerable time at school and therefore increase their risk of pesticide exposure if pesticides have been applied in a manner inconsistent with IPM. Pests pose risks from venomous bites, disease transmission, allergic responses, equipment damage, and may disrupt the learning environment. IPM should achieve long term, environmentally sound pest suppression using a wide variety of technological and management practices. Control strategies in a child-serving facility IPM program extend beyond the application of pesticides to include structural, habitat and procedural modifications that reduce food, water, harborage, and access used by pests (http://schoolipm.ifas.ufl.edu/).

A USDA-NIFA Extension IPM –CS Coordinated Programs Grant to the University of Tennessee (2010 – 2012) has provided funding for the ultimate goal of all schools using IPM by 2015. Objectives are as follows:

1) Increase school IPM adoption in rural areas through demonstrations,
2) Provide IPM training to stakeholders at state-wide, regional and national levels,
3) Encourage school IPM adoption through an Extension agent grass roots effort, &
4) Evaluate the impact of extension IPM efforts on school IPM adoption through a phone school pest management survey.

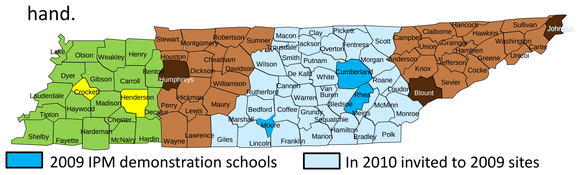
Materials, Methods and Results.

Partnering: We have been promoting IPM in Tennessee's schools since 1996. In the last two years we have partnered with the Tennessee School Plant Management Association (http://www.tspma.com/) which has resulted in 8 invitations to speak at their local, state, regional or national meetings. The TSPMA partnership has also eased the process of finding schools to demonstrate school IPM.

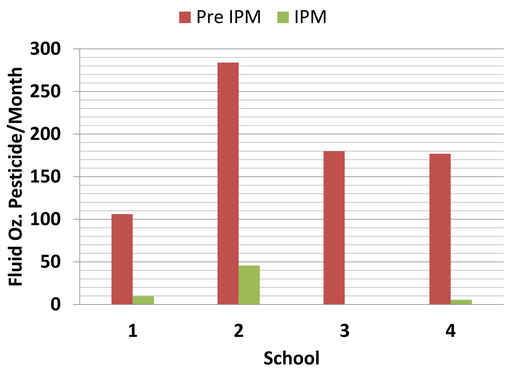


2010, School IPM, Pigeon Forge, Jackson, Memphis (Shelby Co.)
2011, School IPM: Role of Maintenance, Pigeon Forge & Buchanan
2011, School IPM, Nashville, National SPMA, presentation and booth
2011, Bed Bugs, KY & TN SPMA Joint Training, Pigeon Forge

Much of our effort to increase school IPM adoption for the last three years have involved demonstrations. Either the county Extension agent or the school plant manager was approached about initiating an IPM demonstration. We then conducted an inspection; met with custodians, kitchen managers, maintenance staff, administrators, pest management professionals (PMP), etc. and explained the program; drafted a designated activities plan for all parties (UT Extension, schools and PMP); required monthly transmission of pest management information; and made at least 4 inspections throughout the year. At the conclusion, personnel from surrounding school systems were invited to a workshop at the demonstration school to see IPM first hand.



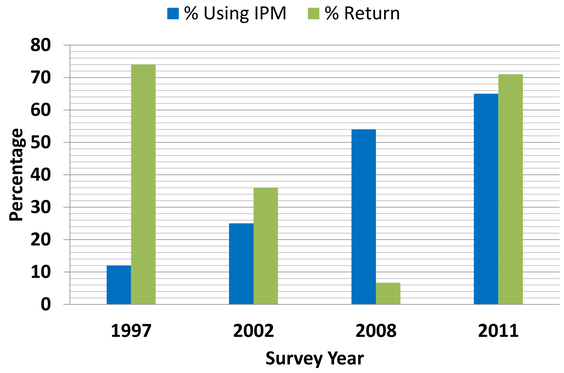
2009 IPM demonstration schools
2010 IPM demonstration schools
2011 IPM demonstration schools
In 2010 invited to 2009 sites
In 2011 invited to 2010 sites
In 2012 invited to 2011 sites



The demonstrations were more successful than we initially anticipated. The volume of sprayed pesticides decreased dramatically in the schools conducting an IPM demonstration in 2010-2011 compared to the prior year with a traditional pest management program. The mean monthly fluid ounces applied decreased by 93 ± 7.1% (mean ± sd) and the number of liquid pesticide applications per year decreased 83.1± 12.3% during the IPM year. All four demonstration schools have an IPM coordinator and 2 out of 4 produced an IPM plan. None have a school board-approved IPM policy. Teacher evaluations and Tennessee's federal Race to the Top grant have kept school officials "preoccupied" and we did not push policy making at this time.

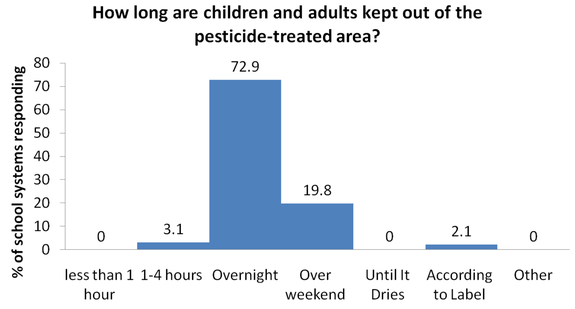
We are making progress towards the goal of all schools using IPM by 2015. Tennessee school pest management surveys conducted in 1997, 2002, and 2008 (http://schoolipm.utk.edu/SchoolIPMsite/wwwroot/School%20Sample%20Site/ipmresu.htm) indicated that slow, but steady, progress is being made towards adoption of school IPM. In 1997, indoor school IPM adoption was estimated at 12% (74% return) and in 2002, had reached 25% (36% return). In 2008, only 6.7% of school districts completed the survey, but 54% of the schools were using high level IPM. It appears the rate of IPM adoption is doubling about every 5 years, but the low response rate in 2008 called that data into question. Thus the survey was changed from an online submission to a phone survey, it was reduced and simplified to include 17 questions and was to be completed for the school district and not for each school. Simplifying it to 17 questions no longer allowed us to collect the detailed data as in the past, but did allow us to discern whether schools were using IPM.

Question	% Yes	% No	% Don't Know
Does your school district currently use integrated pest management or IPM in your buildings?	72	20	8
Does your school district currently use integrated pest management or IPM on your grounds?	67	22	11
Does your school have a written pest management policy? Examples are available online at schoolipm.utk.edu	19	68	14
Does a person trained in pest management decide that pesticides need to be applied?	97	3	0
Does a person trained in pest management apply the pesticides?	99	1	0
Are pesticides applied on a predetermined schedule regardless of pest presence?	51	45	4
Are baseboards sprayed on a regular basis?	50	39	11
Do you have a monitoring program that uses glue boards, sticky traps or similar devices?	72	21	7
Do results of school inspections or monitoring programs help determine when and where pesticides should be applied?	71	22	7
Are the exterior doors checked to ensure they are sealed well enough to prevent mice from entering, for example, are the gaps around doors less than ¼ inch in diameter?	97	3	0
Are baits used for cockroaches?	50	24	26
Are most pesticides used indoors applied into cracks and crevices?	87	4	9
Is a logbook kept of pest sightings and pest management efforts including the type, amount and location of pesticides applied?	35	59	5
If pesticides are sprayed, are children and adults kept out of the pesticide-treated area for a specific time?	98	2	0
Have school buildings or equipment been sprayed for head lice in the last three years?	16	69	16



So what looks good? Roughly 65% of the school districts are using most (>70%) of the IPM practices queried about in the survey. IPM practices included having a pest management policy, using a person trained in pest management to decide that pesticides need to be applied, using a person trained in pest management to apply pesticides, using a monitoring system or inspections to help determine when and where pesticides should be applied, pest-proofing, using cockroach baits, applying pesticides in cracks and crevices, using a logbook, keeping occupants out of treated areas and not spraying buildings or equipment for head lice. Most school districts are keeping occupants out of pesticide-treated areas overnight (73%) or for the weekend (20%).

How long are children and adults kept out of the pesticide-treated area?



What needs improvement?

1. A schedule is still determining when pesticides are applied in 51% of the school districts. We would like to see pest sightings, or results from inspections or monitoring devices as the trigger for pesticide applications. We think this question is a bit ambiguous. Because the pest management professional is present on the same day of each month, the respondents might have interpreted this question as the pest management person applying pesticides on a predetermined schedule.

2. Also, 50% of respondents are still spraying baseboards regardless of pest presence. Spraying baseboards is often ineffective and not necessary. We would like to see pest sightings, or results from inspections or monitoring devices as the trigger for pesticide applications and to determine where the pest is most active. Pests are often hidden in a crack and crevice and not found in an open area such as on a baseboard.

3. Baiting for cockroaches is only performed in 50% of the school districts. This percentage baiting may be higher as 26% of responding school districts were unsure if they had baited for cockroaches. Baiting aids in getting the pesticide back into the cockroach harborage site. Bait is placed in or near a crack and crevice where cockroaches have been found on glueboards or have been sited during an inspection. The cockroach feeds on the bait and either dies in the harborage and is eaten (necrophagy), or its feces which contain toxicant is eaten (coprophagy) or its vomit which contains toxicant is eaten (emetophagy). Baiting is a very efficient way to control roaches and has been proven to reduce the cockroach allergen load without other effort.

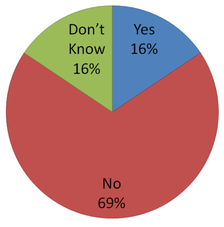
Based on these first three needed improvements, 50% may be a better estimate of Tennessee schools using IPM.

4. Only 35% of school districts are using a logbook which is crucial to any IPM program. Occupants should have access to information describing pesticide treatments. If pest control services (monitoring and inspections as well as pesticide applications, etc.) are performed on the same day of each month, concerned individuals could inquire if, when, where and what pesticides were applied before entering the school the next day.

Accurate record keeping is essential to a successful IPM program. It allows the school to evaluate the results of practicing IPM to determine if pest management objectives have been met. Keeping accurate records leads to better decision making and more efficient procurement. Accurate records of inspecting, identifying and monitoring can document changes in the site environment (less available food, water or shelter), physical changes (exclusion and repairs), pest population changes (increased or reduced, older or younger pests) or changes in the amount of damage or loss. Each school should keep a complete and accurate logbook of pest control services. Pesticide use records also should be maintained to meet any requirements of the Tennessee Department of Agriculture and the school's administrators. The logbook should contain the following items: Pest Sighting Log, Structural Repair Log, Inspection Forms, Maps & Traps of Facility & Monitoring Station Locations, Pesticide Application Records, Time Log, Labels and Material Safety Data Sheets (MSDS), Newsletters and Web Sites, and IPM Policy & Plans or Contract. Extension agents from each county were to deliver an example of the log book to each school district this and last year. Logbook examples can be found at schoolipm.utk.edu.

5. Only 19% of school districts have developed a policy statement. A policy statement should be written stating the school administration's intent to implement an integrated pest management program. It should briefly specify the expectations of the program, including the incorporation of existing services into an IPM program and the education and involvement of students, staff and pest manager. A model policy statement is provided in APPENDIX I (https://utextension.tennessee.edu/publications/Documents/pb1603.pdf).

Have school buildings or equipment been sprayed for head lice in the last three years?



6. School personnel are still spraying buildings or equipment for head lice in 16% of the responding school districts. We do not recommend spraying for head lice. Head lice don't live away from the human host for very long (< 2 days) and it is illegal for school personnel to apply pesticides in a school unless they are under the direct supervision of someone licensed by the Tennessee Department of Agriculture to apply pesticides. See the UT school IPM February 2011 newsletter at http://schoolipm.utk.edu/documents/newsletters/february_2011.pdf) for a lengthy discussion of this subject or use this QR code to visit our school IPM web site.

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Sources:
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