



Pests and Pesticides in Child-serving Facilities: An IPM Newsletter

COVID-19 and the 2021 School Pest Management Survey

Karen M. Vail

Every other spring since 2011 we conduct a phone survey of the pest management decision-makers in each school system to determine where our schools lie on the integrated pest management (IPM) continuum. This year we made several changes to the survey to understand better how COVID-19 impacted pest management services in Tennessee’s schools. In addition, we asked specific questions about bed bugs and fire ants and whether schools would be interested in demonstrations. All of these new questions increased the survey from 17 to 29 questions. Unfortunately, the response rate (23%) was much lower this year than in 2019 (72%) or 2017 (67%).

Let’s start with the new questions.

Please describe the impact of the COVID –19 pandemic on pest control services. Were there any changes in the frequency of regularly scheduled visits? Only 18% of respondents indicated the response to the pandemic had changed the frequency of service visits; some stated this occurred in the beginning but not now.

Do you believe the pest infestations that you are currently encountering have increased in severity compared to the past few years? With 82% or more of respondents indicating no increase in severity of bed bugs, cockroaches, or mice, the response to COVID-19 had little effect on pest management or pest numbers in Tennessee’s schools.

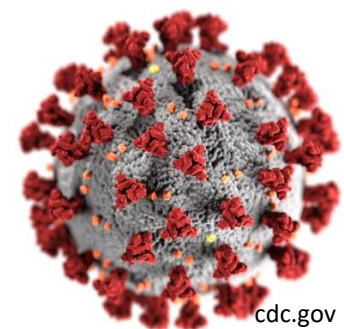
Pest	Yes (%)	No (%)	If yes, explain
Bed bugs	18	82	Kids being home more often; Family movement's/ unprepared; better at identification, education on bed bugs increased
Cockroaches	6	94	Lack of people in building; Family movement's/ unprepared
Mice	9	91	Lack of people in building; when it got cold

Special Points of Interest

With 82% or more of respondents indicating no increase in severity of bed bugs, cockroaches, or mice, the response to COVID-19 had little effect on pest management or pest numbers in Tennessee’s schools.

This issue

COVID-19 and the 2021 School Pest Management Survey	1
Rope, snake, worm or trail of fungus gnat larvae?	6
Links/Contacts	8



cdc.gov

What is the most problematic pest for your school system?

Pest	% 2021 respondents indicating most problematic	% 2002 respondents indicating most troublesome
Cockroaches	59	79
Ants	31	35
Brown recluse/spiders	31	27/8
Mice	10	35
Bed bugs	7	*
Termites	3	21.6
Wasp	3	13.5

* bed bugs not included in the 2002 survey

The top four most troublesome pests remained the same, with cockroaches maintaining the lead over nearly two decades.

Has your school system experienced any bed bug introductions?

Yes	No	Don't know
52	36	12



This is the first time we formally asked about bed bugs and more than half of the school systems admitted to bed bug introductions. Bed bugs are blood-sucking insects that may be introduced to schools but rarely establish. Bed bugs were mentioned when we asked about what we could do to help with your pest management needs and what topics to include in future newsletters.

One person wanted more discussion of bed bug treatments for less cost. So be watching for further discussion of bed bugs in future newsletters. We will be holding the 7th Annual Tennessee Bed Bug, Cockroach and Rodent management Meeting on August 4, 2021. More information about this meeting can be found at <https://bedbugs.tennessee.edu/7th-annual-tennessee-bed-bug-cockroach-and-rodent-management-meeting/>.

Questions on fire ants

	Yes (%)	No (%)	Don't Know (%)
Are fire ants present on your school property?	56	36	9
If yes, are fire ants managed?	95	5	0



The Tennessee Imported Fire Ant Quarantine expanded in March 2021 and now includes all or part of 74 counties (<https://fireants.tennessee.edu/management/quarantine/>). Fire ants are a medical concern on school grounds because of their ability to bite and sting people. Most fire ant stings result in a fiery, itchy sensation and a localized red raised area and pustule. However, a small percentage of people are hypersensitive and could have a severe reaction, such as life-threatening anaphylaxis. Five percent of responding school systems indicated fire ants were on their property but are not managed—this is putting students and anyone else walking on school property at risk. We have funding over the next three years to demonstrate fire ant treatment methods. Six out of ten schools are managing fire ants with in-house personnel. Broadcasting is often the most efficient way to treat all mounds on a property. Still, only 16% of responding schools were using this technique. Almost three-quarters of respondents did not know how their fire ants were managed. We can train you to broadcast a fire ant bait or even to apply individual mound treatments. Please contact us to schedule a demonstration.

Who manages fire ants?	%
Contracted pest management professional	40
In-house personnel	60
Volunteer	0

How are fire ants managed? Indicate all that apply.	%
Broadcasted bait	16
Broadcasted granular insecticide, not a bait	0
Individual mound treatment with a bait	11
Individual mound treatment with a granular insecticide	0
Individual mound treatment with a drench	0
Individual mound treatment with a dust	0
Don't know	74

Question	Yes (%)	No (%)	Don't know (%)
Does your school district currently use integrated pest management or IPM in the buildings?	88	9	3
Does your school district currently use integrated pest management or IPM on the grounds/athletic fields?	88	9	3
If no, have you considered implementing IPM?	25	50	25
Does your school have a written pest management policy?	48	30	21
Does a person trained in pest management decide that pesticides need to be applied?	85	12	3
Does a person trained in pest management apply the pesticides?	91	6	3
Are pesticides applied on a predetermined schedule regardless of pest presence?	53	44	3
Are baseboards sprayed on a regular basis regardless of pest presence?	55	33	12
Do you have a monitoring program that uses glue boards, sticky traps or similar devices?	76	21	3
Do results of school inspections or monitoring programs help determine when and where pesticides should be applied?	79	6	15
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?	94	3	3
Are baits used for cockroaches?	48	33	18
Are most pesticides used indoors applied into cracks	79	6	15
Is a logbook kept of pest sightings and pest management efforts including the type, amount and location of pesticides applied?	68	24	9
If pesticides are sprayed, are children and adults kept out of the pesticide-treated area for a specific time?	97	3	0

IPM emphasizes regular inspections, not regular spraying of pesticides, to detect pests. Basic pest survival elements, such as food, water and shelter, are removed and pest access into a building is reduced. Pesticides, if deemed necessary through inspections, target the pest and minimize the risk of exposure to building occupants. Once again, more school systems believe they are using integrated pest management, but the fact they are applying pesticides on a scheduled basis without pests present indicates they aren't .

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

	Yes (%)	No (%)	Don't Know (%)
Buildings or equipment sprayed for head lice?	6	52	42



cdc.gov

I think we are making progress towards eliminating premise sprays for head lice, although I'm concerned about the 42% of respondents that did not know if premises were sprayed. Head lice do not live long off the host, and environmental sprays are not necessary. The Tennessee Department of Health is developing an extensive lice management manual which should be available soon.

Is the school IPM newsletter which is distributed by email four or more times per year helpful?

	Yes (%)	No (%)	Don't Know (%)
Is this school IPM newsletter helpful?	73	0	27

We're pleased to see that almost three-fourths of respondents find our newsletter useful. Unfortunately, about a quarter of our emails are not reaching the intended end user. We updated email contacts during the phone survey so more newsletters should make it through. Please add kvail@utk.edu to your list of accepted senders if you have not done so already. If you are a Tennessee School Plant Management Association (TSPMA) District Director, can you please check with your members to ensure they are receiving this newsletter? Please ask those not receiving it to forward their email address to me to add them to the distribution list.



Keith Dickson of Decatur County Schools broadcasting Extinguish Plus Fire Ant Bait across a soccer field.

Rope, snake, worm or trail of fungus gnat larvae?

Karen Vail

Between June 11 and 27 of this year I received three similar email inquiries, one from Loudon and Blount counties each in East Tennessee and one from Davidson County in Middle Tennessee. Two of the best photos submitted are below.



Figure 1. "Rope" of fungus gnat larvae moving over mulch (top photo) and paving blocks (bottom photo).

The above photos were sent from Maryville where the "worms" were discovered in mulch and on the driveway in the morning. Quite interesting, isn't it? In the past, I have received inquiries regarding a moving mass of maggots, or larval masses moving like a slug on the concrete, or a trail of slimy something climbing a wall. The mass looks like a rope, snake, or large worm, but the individuals look like insect larvae upon closer inspection. Closer inspection yet reveals a "rope" of fungus gnat larvae.

Here's an excerpt of an email that Tami Minert and family of Farragut, TN sent to me to request assistance with identification in June of 2008.

"Saturday evening, June 7 we had a tremendous rainstorm here in Farragut. The following morning while out walking I discovered these tiny white worms with a black dot in long string-like groups. They appeared to be moving in unison. Those at the front would crawl forward and the others in the middle and end would follow along. I discovered many groups of them all over the neighborhood. One of the strings was as long as my arm!!! Once the sun's rays hit them, they died. Two days later, during the night, we had another rain storm and the following morning I found the same type of worms. In one location there were two separate groups that crawled together to form one group. I've attached a picture in hopes that you can help me to discover what these interesting worms are."

Fungus gnat larvae have threadlike, 1/4-inch white bodies with a dark head capsule and typically feed on fungi and decaying organic matter. When larvae are present in "ropes," these "ropes" may be several feet long and can be seen crawling up walls or along driveways where and when rain or moisture has been abundant. The adults are about 1/8-inch long, dark, and slightly resemble a very small mosquito.

Usually we suggest eliminating the food source to control flies such as fungus gnats. In a case like this, where the larvae feed on decaying vegetation or fungus on roots and are found in moist, shady areas such as leaf litter, removing all food sources in a yard would be quite difficult. By mechanically destroying the maggot "rope" and reducing the amount of decaying vegetation in the yard, you may reduce the size of future infestations. Still, it is unlikely that this effort will eliminate them. Drier weather should lessen the chance of future occurrences.

Maybe we're thinking about this all wrong. According to Olli Korhonen, Finnish folk tales describe this moving maggot rope as an "aarremato" or a treasure worm. Right, you guessed it – if you follow the rope, they'll lead you to buried treasure. You can find Olli's video of moving Finnish fungus gnat maggots at <https://www.youtube.com/watch?v=TU2Q8kVs0hU>. Or if you'd like a local video, try this one of a Mt. Juliet larval rope that appears to be more than 4 ft. long, <https://www.facebook.com/SoilPlantPestCenter/videos/828811134398923>.

You can find more information on fungus gnats in the UT Extension fact sheet, SP341C Fungus Gnats by Frank Hale at <https://extension.tennessee.edu/publications/Documents/SP341-C.pdf>.

This article was reprinted from the Insec(tc)ure*: Are you insecure about your insect cures? A UT Urban IPM Lab Newsletter for the Pest Management Industry at <https://epp.tennessee.edu/wp-content/uploads/2021/06/2021-7JulyFungusgnatropefinal.pdf>

This newsletter produced by :

Karen Vail, Ph.D., Professor,
 Extension Urban Entomologist
 Entomology and Plant Pathology
 370 Plant Biotechnology Bldg.
 2505 E J Chapman Drive
 Knoxville, TN 37996-4560
 ph: (865) 974-7138
 fax: (865) 974-8868
 email: kvail@utk.edu
 web: <http://schoolipm.utk.edu>
<http://epp.tennessee.edu/people/directory/dr-karen-vail/>



Jennifer Chandler,
 Research Specialist III
 Entomology and Plant Pathology
 370 Plant Biotechnology Bldg.
 2505 E J Chapman Drive
 Knoxville, TN 37996-4560
 ph: (865) 974-7138
 fax: (865) 974-8868
 Email: jchand11@utk.edu

Comments or questions
 on this newsletter?

Contact kvail@utk.edu

Follow us on
 Facebook at
[https://
 www.facebook.com/
 UrbanIPMTN](https://www.facebook.com/UrbanIPMTN)



Partial support for this newsletter provided by the USDA
 NIFA CPPM EIP grant (# 2017-70006-27287) awarded to the
 University of Tennessee.

The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services. All qualified applicants will receive equal consideration for employment without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, gender identity, age, physical or mental disability, or covered veteran status.

For more information about IPM in Tennessee schools and other facilities, or to view past issues of *Pests and Pesticides in Child-serving Facilities*, please visit <http://schoolipm.utk.edu>

NATIONAL IPM INFORMATION

eXtension's Pests in the Home
<https://pestsinthehome.extension.org/>

National School IPM
schoolipm.ifas.ufl.edu/

IPM in Schools Texas
<http://schoolipm.tamu.edu/>

IPM Institute of North America
www.ipminstitute.org/

School IPM PMSP—all schools IPM by 2020 [https://
 ipminstitute.org/projects/school-ipm-2020/](https://ipminstitute.org/projects/school-ipm-2020/)

EPA schools
<http://www2.epa.gov/managing-pests-schools>

For further information about the IPM program at your school or in your county, contact your county Extension Agent or the school IPM Coordinator. For county agent contact information, please visit <https://utextension.tennessee.edu/office-locations-departments-centers/>

Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), the University of Tennessee Institute of Agriculture and University of Tennessee Extension assume no liability resulting from the use of these recommendations.

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.