Creating Ticks Safe Schools Using IPM Webinar

September 30, 2014

Questions/Answers and Tick Resources

Thank you for attending the *Creating Ticks Safe Schools Using IPM* webinar broadcast on September 30, 2014, a part of the School IPM Webinar series hosted by EPA's Center of Expertise for School IPM.

Presenters

- Thomas Mather, Ph.D., University of Rhode Island Center for Vector-Borne Disease
- Kathy Murray, Ph.D., Maine Dept. of Agriculture, Conservation and Forestry
- Christine Dunathan, Friends School, College Park, MD
- Marcia Anderson, Ph.D., EPA Center of Expertise for School IPM

Questions and Answers

The questions below were posed by the webinar participants. The responses may have been refined by the presenters following the webinar for clarification or to include additional resources.

1. **Will you be providing a link to the recorded webinar?**
   (MA) The recorded webinar can be found at https://epa.connectsolutions.com/ticksafeschoolsipm

2. **What is the name of essential oil perimeter spray used in Maryland?**
   (Ms. Dunathan): We use Essentria IC3. After extensive research, we chose this one; however, there are others. If/when efficacy data on newer products becomes available, we will assess whether or not to switch. Since we are near wetlands and a creek, we do not spray permethrin-based pesticides or pesticides detrimental to aquatic environments on or near the site. We also sought to use a spray with as narrow, targeted a spectrum for tick toxicity as possible.
   (TNM): It is important to note that there has been very little efficacy testing with most minimal risk natural products for tick control. Also, in doing product testing, we have found quite a bit of variability in formulations where the active is reportedly the same. For example, rosemary oil is the principal active in both Essentria IC2 and Essentria IC3. In two published studies (Rand, *et al.* 2010 J. Med Entomol; Elias, et al. 2013 J Med Entomol) IC2 provided about 80% control and in studies we conducted we also saw about this level of control. However, IC2 is no longer manufactured, having been replaced by IC3. When testing this formulation, we found considerably lower (about 30%) tick killing efficacy in both small plot and backyard tests. Before relying on these natural alternative products, or any product, to deliver tick bite protection, it is important to evaluate and understand the level of efficacy for each product and formulation.

3. **How is TickEncounter Resource Center funded?**
   (Dr. Mather): Currently, TickEncounter's is funded by a combination of faculty release time, competitive federal cooperative agreement funds, user subscription fees (TickEncounter Prevention Partners), fee for services contracts, and private donations.

4. **Where are these resources available for purchase?**
   (Dr. Mather): TickEncounter's various TickSmart resources as seen in the webinar (TickSmart Learning kits, Daily TickCheck reminder cards, coat hook hangers, and other consulting services) can be purchased directly by contacting TickEncounter (www.TickEncounter.org/contact).

5. **How would you know if the ticks are gone once the pesticide is being used?**
   (Dr. Mather; Dr. Murray): Monitoring for ticks is best done by dragging a large square of light colored flannel or corduroy cloth over the ground in, and immediately adjacent to the wooded edges that were treated. Do this prior to and about a week after treatment. This should be done by someone with enough training to know the appropriate habitat to be sampled, the most effective sampling strategy for the tick species being monitored, and the ability to correctly identify the ticks collected on the cloth. Keeping track of the numbers of ticks found on students (reported by teachers and school nurse) before and after treatment may give some indication of the effectiveness of the treatment also.

6. **What species of nematodes were used on fields for ticks?**
   (Ms. Dunathan) We ordered through the internet, looking for *Steinernema carpocapsae*, since our research indicated that this species has the greatest effect on ticks. Given our site conditions at the time (sparse grass, lack of topsoil) we felt that the nematodes were unable to survive, and discontinued their use.

7. **How effective are the pemethrin-treated bands for repelling ticks?**
   (Ms. Dunathan): We have never had a report of a tick bite from a student/family using the bands.

8. **How can I do a good tick check in difficult to see places like hair or back?**
   (Dr. Mather) That can be challenging. Using a mirror and good lighting, it's possible to see most places with the exception of the back. For that, it usually requires the help of a partner. Keeping your shirt tucked in while out in tick habitat can help limit tick attachments to upper body regions.

9. **What stage of a tick's life is best to treat it to kill it? I live in northern California.**
   (Dr. Mather): The most prudent strategy would target the tick stage posing greatest risk. In the case of blacklegged ticks, pesticide applications should be timed for peak nymphal stage—that would mean early spring in CA, mid-May in the eastern and upper mid-western states, and March in the southeast. Additional treatments targeting adult blacklegged ticks which emerge in December in CA and fall and spring in the rest of the U.S. may be needed to get an adequate level of tick control.

10. **What is a garlic barrier - how is it made?**
    (Ms. Dunathan): Garlic Barrier™ is the product name of a pesticide in which garlic juice is the active ingredient (99.3% garlic juice). This product is considered to be a 'minimal risk pesticide' therefore efficacy and safety testing is not required and there has been little research done to demonstrate its effectiveness against ticks.

11. **Are there any IPM - alternative to pesticide method?**
    (Dr. Murray) IPM relies primarily on planning, prevention (education, wearing appropriate clothing, avoiding tick-infested habitats, and the use of repellents), tick monitoring, mowing and landscaping to reduce tick favorable habitats and deter wildlife from areas frequented by people, good record-keeping, and regular program evaluation. Research is needed to develop more non-pesticide tick control methods. Until then, technologies that allow pesticides to be used effectively in very limited, well-targeted, well-timed ways are the only proven tick control methods available to augment prevention, education, avoidance, mowing and landscaping methods.

12. **Can you send a list of tested exempt products?**
    (Dr. Anderson): Visit the EPA website at
    http://www.epa.gov/pesticides/regulating/labels/labels_faq/lr_faq_17.html

13. **How long will ticks (or tick nymphs) live on socks after socks are removed and put in laundry basket for later washing?**
(Ms. Dunathan): We tell parents, "Don't put them into the laundry basket." Ticks can crawl out and hitch a ride on people or pets. Instead, put the socks, pants, shirt, undergarments, etc. that you wore directly into the dryer on the highest heat the garments can stand for about 10 minutes. Then wash and dry as usual. Laundering, even in hot water, does not necessarily kill all ticks but desiccation in the dryer does.

14. **Is there a minimum temperature in which laundry should be washed to kill ticks or tick nymphs?** See Ms. Dunathan's response to Question 13.

15. **Can insect repellents such as DEET be sprayed on clothing to repel ticks if you do not have ready access to permethrin?**
(Dr. Murray; Dr. Mather): While DEET can be applied to clothing it is not a very effective strategy for tick bite protection. DEET is a bit more effective when applied to exposed skin but then again, ticks can quickly crawl up under clothes where the skin was not treated with DEET. Applying permethrin to clothing is the most effective way to repel ticks and obtaining permethrin is as easy as purchasing from Amazon since it is available there.

16. **Can you provide advice and/or suggestions for implementing these tick programs into schools?**
(All Presenters): Implementing an effective IPM program in schools requires cooperation and support from the entire school community. Everyone, from the school board and administration to students and families, plays an important role in establishing and implementing an effective and sustainable program. Meet with the principal, superintendent or headmaster to find out if your schools have an integrated pest management policy and/or plan. If so, find out what tick education, avoidance, prevention and management practices are already in place and discuss concerns and ideas for improvement. A supportive administrator can help to establish priorities, assign responsibilities and direct resources to ensure success. Organize a public forum to help identify priorities, engage the community and garner support. Establish an IPM Committee, or invite the health and safety committee to lead the development of a written IPM plan that includes a tick IPM component. A number of good fact sheets, guidelines, sample plans, and checklists for establishing and maintaining effective school IPM program are available. Check for guidance and outreach materials in your state or check these sites:
    - EPA: www.epa.gov/pesticides/ipm
    - eXtension: www.extension.org (type 'school ipm' in the search box)
    - www.TickEncounter.org

17. **How can one address barriers from the Department of Education for getting these curricula integrated?**
(Dr. Mather): This question may have been asking about teaching about tick IPM in classrooms. The first step in getting curriculum recognized at the state level is to align it with the state science (most states have adopted the National Common Core Science standards) or state health education standards. Each element of the lessons should be mapped to specific learning standards and a rubric is needed to assess student learning performance. If your state is participating in the Department of Education's Green Ribbon Schools program, talk with the Green Ribbon Schools contact at your state education agency about including tick education in your state's Green Ribbon Schools recognition criteria. However, a voluntary education program through your state public health or education agencies, local schools, or environmental education centers is likely to gain more traction than trying to get tick education into state learning standards.

    At the level of school district, the curriculum coordinator may be a good contact to start the discussion about educational goals and assessment of learning and how to integrate tick IPM education into the science, health, or environmental education curricula. In my experience the biggest barrier to teaching IPM in the classroom is lack of time, and teacher unfamiliarity with the topic. Teachers need training on how to teach the lessons and often a hands-on demonstration is the most effective way to provide it. Partnering with a college to introduce lessons to pre-service teachers is one way to do that. Another option is to offer training workshops to classroom teachers,

perhaps as part of another training opportunity offered by organizations such as Agriculture in the Classroom or your statewide science teachers association.

To facilitate adoption by schools, TickEncounter is developing simple, short, goal-oriented learning kits. We agree that the greatest barrier to implementing tick literacy training in schools is time and teacher familiarity (or lack of familiarity) with the subject.

Resources

Tick Safety in Schools

- *IPM for Protecting Children from Tick-Borne Diseases:* http://www.epa.gov/pesp/ticks/tick-safety-in-schools.pdf
- Tick Safety http://www.maine.gov/dacf/php/integrated_pest_management/school/pest-solutions/documents/me-school-ipm-factsheet_ticks_2-14.pdf

School IPM Action Plans for Ticks

- Eastern ticks: http://www.extension.org/pages/24666/ipm-action-plan-for-eastern-us-ticks
- Western ticks: http://www.extension.org/pages/64976/ipm-action-plan-for-western-us-ticks

Tick Smartphone App

- Southern ticks: http://tickapp.tamu.edu

Tick Repellent Choice Tool

- http://www2.epa.gov/insect-repellents/find-insect-repellent-right-you

Classroom Lessons and Teacher Resources

- Ticks: http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/lyme/lyme-resource-educators.shtml
- IPM: http://www.maine.gov/dacf/php/integrated_pest_management/school-ipm-curricula/index.shtml

Tick Identification

- Simple identification tick key: http://www.idph.state.il.us/envhealth/tickkey.htm
- Wisconsin: http://labs.russell.wisc.edu/wisconsin-ticks/tick-identification-for-public-health-and-medical-professionals
- Hard ticks of the Eastern US: http://us-tick-key.klacto.net
- Tick Encounter Center: http://www.tickencounter.org/tick_identification
- Ticks of Florida: http://www.flsart.org/fad/documents/Tick_%20ID%202013_Color_Reduced.pdf
- Interactive Program For Teaching Tick Morphology: http://www.afpmb.org/content/interactive-program-teaching-tick-morphology-0