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The Business Case for Greater Investment in Tick IPM

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Harnessing marketplace power to improve health, environment and economics
www.ipminstitute.org

Whole Foods Market 2014 Supplier Award for Outstanding Quality Assurance
2012, 2009 US EPA Sustained Excellence in IPM Award
2009, 2008, 2005, 2004 National Champion, US EPA Pesticide Environmental Stewardship Program
2005 Children's Environmental Health Recognition Award, US EPA Office of Children's Health Protection

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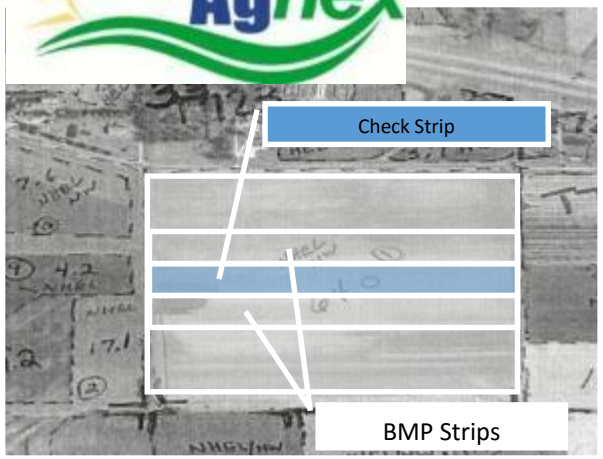
How We Make a Difference!

Ninth International IPM Symposium
March 2018



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Public Tick IPM Working Group

- **Goal: Reduce incidence of tick-borne disease** by collaborating on IPM-related efforts that ultimately reduce the risk of exposure to ticks and pathogens.
- Priorities:
  - Develop and **promote adoption** of IPM strategies.
  - **Clarify and minimize risks** associated with acaricides and other tick-borne disease management products.
  - **Coordinate with the Federal Tick-Borne Disease IPM Workgroup** to complement activities.
  - **Build partnerships** and communicate with diverse stakeholders .
  - **Facilitate collaborative initiatives** within the working group.
  - **Develop, maintain and communicate current specific stakeholder priorities** for research, regulation, education and management to identify and pursue stakeholder-identified needs. https://tickipmwg.wordpress.com/priorities/
- ~90 members; ~12 participants on monthly conference calls featuring presentation by experts, discussion, pursuit of priorities including this Symposium, upcoming Tick-borne Disease Pest Alert in collaboration with the USDA NIFA North Central IPM Center.
- *Tom Mather, Tom Green co-chairs; facilitated by Chloe Nelson, IPM Institute; Funded since 2013 by the USDA NIFA North Central IPM Center.*

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Key Business Case *Elements*

- What are <u>all</u> of costs associated with tick-borne illnesses?
- How much are we spending now on each? In the future?
- Who is spending how much on what?
- What's the ratio of federal investment to overall costs?
- What is the return on investment for each cost?
- How can we spend less?
- What is the role of, and benefit to, the private sector?

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Lyme Disease Costs

- Direct medical costs of Lyme Disease (LD) (Magid *et al.* 1992)
  - Range $14 to $6724 per case, for a single dose of oral antibiotic to major cardiac complications.
  - 1989 dollars, data from Blue Cross/BlueShield records.

- Direct, indirect medical costs, non-medical costs, lost productivity (Zhang *et al.* 2006)
  - Range $5 to $24,985; mean costs of $8172 per case; 23,763 reported cases.
  - $203 million/year/US.
  - Lots of variability in costs; costs declined over 1997-2000 study period.
  - Maryland patient survey data; early through late stage LD.

- Zhang costs updated to 2012 (lymedisease.org 2013)
  - Mean cost of $400 (tick bite) to $10,343 (early stage LD) to $20,502 (late stage).
  - Estimated 300,000 cases/year.
  - $3.1 billion annual cost.

- CDC *Cost of Lyme Disease* study underway, multiple regions, results to be determined.

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Estimating Total US TBD *Case* Costs

Cost (after Zhang et al., mean at 2016 $$)	$$/case, 2016 $$	Consumers	Insurers	Govts.	Hospitals	Workers	Employers
Direct medical: office visits, hospital treatment	$3931	+	++	+	+		+
Indirect medical: prescription, OTC	*$1721*	+	++	+	+		+
Non-medical: transport, childcare, home health aides	*$1032*	++	++	+			
Lost productivity, wages	*$4134*	+	+			++	++
TOTAL	*$10,817*						
Multiply by 329,000 cases (Nelson)	***$3.6 billion***						
Plus other diseases? +30% (+98,700 cases)	***$4.6 billion***						
2026 dollars + 30% case growth: 658,000 cases?	***$8.3 billion***						
Plus other diseases? (955,400 total cases)	***$10.8 billion***						

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Additional TBD Costs?

- Increase in cases since Nelson *et al.* 2005-2010 case estimates.
- Tick bite costs; patient costs beyond Zhang *et al.* four-year study period.
- Medical cost inflation > general inflation rates.
- Pain and suffering.
- Litigation, liability, administration.
- Research and development, public and private sector.
- Public health surveillance, monitoring.
- Public sector prevention programs; outreach, education, training.
- Landscape treatments; cultural through acaracide, landowner/contracted.
- Livestock, domestic animal treatment: preventive-curative.

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Counterweights on cost increases

- Decreases in costs over time due to more efficient, effective and earlier medical interventions (Zhang *et al.,* Kugeler *et al.)*.
- Related risks, e.g., Zika, may accelerate prevention, avoidance, suppression of ticks.
- Effective products and programs, both new and more effective marketing of current solutions, should reduce costs at all stages: tick bites through late-state disease.

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Observations

- Perfectly targeted investment of $10,000 per case **in effective case prevention**, or $3.29 billion total, generates $269 million in avoided costs, or “profit”.
- At-risk universe is some multiple of cases; diluting investment per person, independent of avoided costs/profit.
- Public sector low-hanging fruit: Showering? Removing leaf litter/brush?
- Low-hanging fruit for the private sector?
  - ~12% of residential property owners contract for landscape services.
  - ~18% contract for structural pest management services.
  - Growing number of profitable specialty service models, e.g., Mainely Ticks.

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Observations continued

- We need to accelerate efforts to engage the private sector!
  - Insurers bear disproportionate burden of costs, currently invest well below potential to benefit.
  - Employers similarly bear disproportionate costs vs. current investment in solutions.
  - Both insurers and employers need to be activated to directly invest, and to advocate for greater public investment.
  - Pest Management Professionals and Landscape Service Professionals, especially those currently servicing at-risk accounts, are leaving money on the table.
  - Do-it-yourself product manufacturers, distributors and retailers may be leaving money on the table by failing to market effectively to at-risk consumers.
- We need to know more about the effectiveness of these interventions on the bottom line: Reduction in disease incidence/severity!

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