

	<p>REGIONE AUTONOMA FRIULI VENEZIA GIULIA</p>	<p>ersa  REGIONE AUTONOMA FRIULI VENEZIA GIULIA Agenzia regionale per lo sviluppo rurale</p>
 <p>CIMICE MARMORATA ASIATICA IN FRIULI VENEZIA GIULIA insetto alieno di difficile gestione in agricoltura</p>		
<p>Sabato 29 settembre 2018 ore 9.00</p>		<p>Villa Manin di Passariano - Codroipo - Udine Aula Riunioni - Secondo piano della Barchessa di Levante</p>



***Aspetti generali riguardo la
cimice marmorata asiatica:
biologia e situazione
in Italia e nel mondo***

Iris Bernardinelli, Giorgio Malossini, Luca Benvenuto, Rosario Raso
Ersa - Servizio fitosanitario e chimico, ricerca, sperimentazione e assistenza tecnica

Halyomorpha halys:

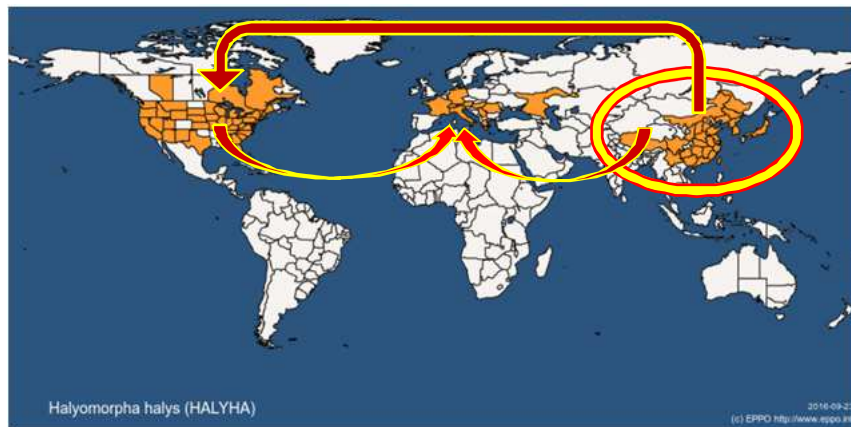
- **Nome comune:**
cimice marmorata asiatica
- **Ordine:**
Heteroptera
- **Famiglia:**
Pentatomidae
- **Nome scientifico:**
Halyomorpha halys (Stål)



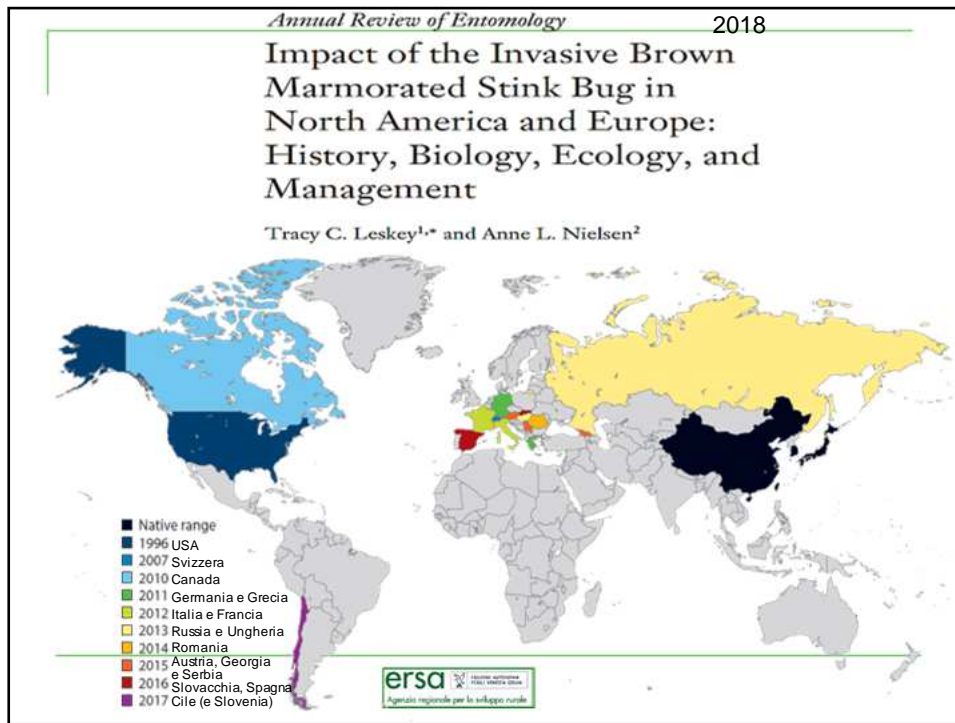
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Da dove arriva?

- (2004 in Liechtenstein, 2012 in Italia - provincia Modena e nel 2014 in FVG)



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STATI UNITI d'AMERICA

<http://www.stopbmsb.org>

Management of brown marmorated stink bug in US specialty crops

ABOUT US
Project, people, research, reports, publications...

STINK BUG BASICS
Origins, life stages, photos, look-alike insects...

WHERE IS BMSB?
Maps, crops, host plants, damage gallery...

MANAGEMENT
Monitor, manage by crop, behavior and landscape...

BIOLOGICAL CONTROL
Native natural enemies, samurai wasp...

MORE RESOURCES
News, videos, espanol, resource links...

Overview

The brown marmorated stink bug, *Halyomorpha halys* (Stål), is a voracious eater that damages fruit, vegetable, and nut crops in North America. With funding from USDA's Specialty Crop Research Initiative, our team of more than 50 researchers is uncovering the pest's secrets to find management solutions that will protect our food, our environment, and our farms.

Updates

[Survey BMSB Management Survey for Commercial Producers](#) Participate in a nationwide survey to gather information from farmers and growers on the economic impact of the brown marmorated stink bug (BMSB) on agriculture.

[A Local Researcher Is Breeding an Army of Wasps to Devour Invasive Stink Bugs](#) The brown marmorated stink bug—already the scourge of the Northeast—is also in Washington. And it might move in with you this winter. A WSU researcher is breeding tiny samurai wasps in an effort to fight the pests. Source: *The Seattle Times*, Aug. 23, 2018.

Funding

United States Department of Agriculture National Institute of Food and Agriculture
Specialty Crop Research Initiative

Collaborators

OSU NC STATE UNIVERSITY UNIVERSITY OF MARYLAND WASHINGTON STATE

ersa EUROPEAN RURAL OBSERVATORY FOR INTEGRATED AND INNOVATIVE POLICIES
Agenzia regionale per lo sviluppo rurale

NUOVA ZELANDA

<https://www.mpi.govt.nz/importing/other/vehicles-and-machinery/requirements/>

Importing
Oh stink! Meet NZ's only stink bug dog bought in for battle against the foreign invader

13 Apr, 2018 5:08am

Attività di ricerca svolte in Friuli Venezia Giulia

- test di attrattivi utilizzati in Nuova Zelanda per alcuni insetti del pesco che hanno un'attrattività di tipo alimentare (in collaborazione con ERSA)
- prove di sterilizzazione insetti per inondazioni con insetti sterili (utilizzabili dove il livello di popolazione è basso) (in collaborazione con Fondazione Edmund Mach - San Michele all'Adige TN)

1 September 2018 – New IHS in force
 You must meet requirements under the new import health standard for vehicles, machinery, and equipment relating to the brown marmorated stink bug risk season.

Australia

<http://www.agriculture.gov.au/import/before/pests/brown-marmorated-stink-bugs>

Australian Government
 Department of Agriculture and Water Resources

Home | Ministers | Media Centre | Jobs | Languages

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Importing | Exporting | Biosecurity | Travelling to Australia | Agriculture, farming and food | Trade and market access | ABARES science and economics | Water policy and resources | Forestry | Fisheries | About us

Home » Import » Before you import goods » Be biosecurity aware – See. Secure. Report. » Seasonal measures for Brown marmorated stink bug (BMSB)

Seasonal measures for Brown marmorated stink bug (BMSB)

Be biosecurity aware – See. Secure. Report.

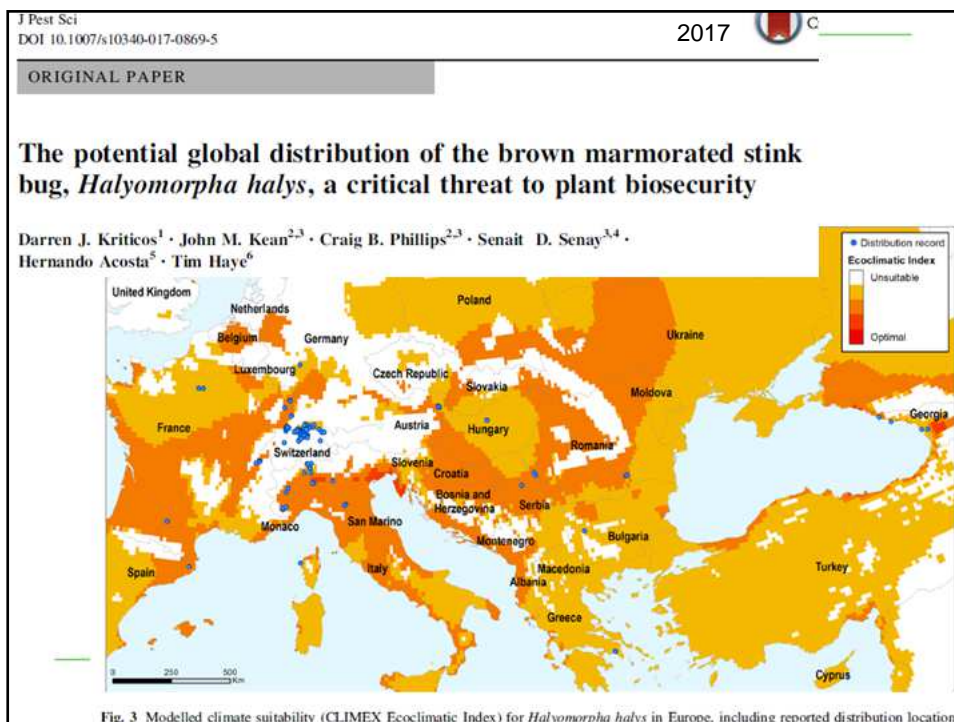
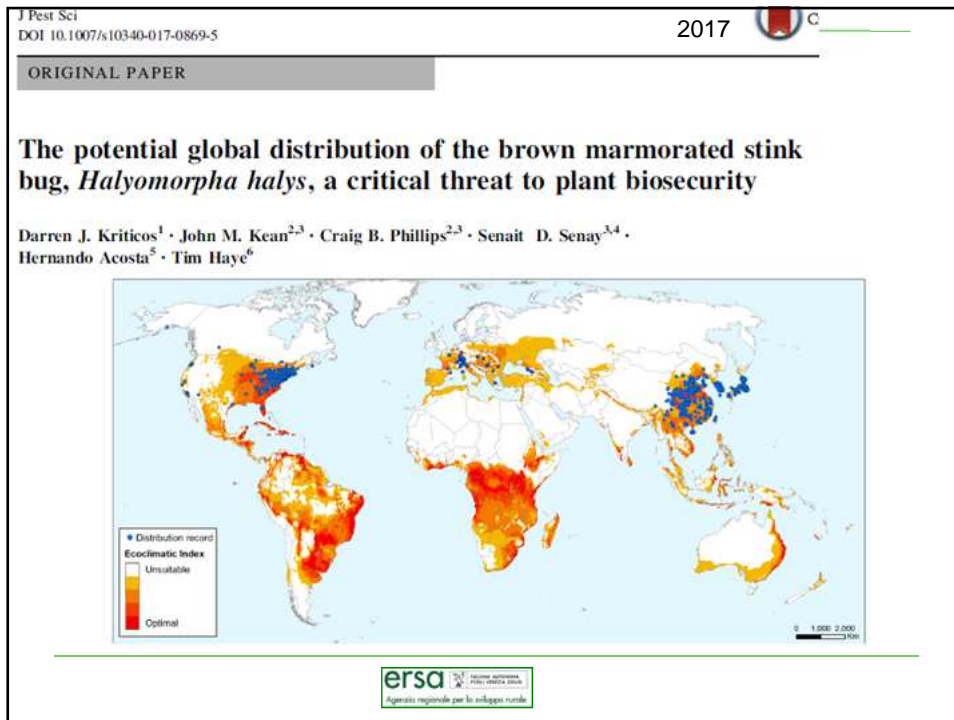
- Asian longhorn beetle
- Brown mulberry longhorn beetle
- Seasonal measures for Brown marmorated stink bug

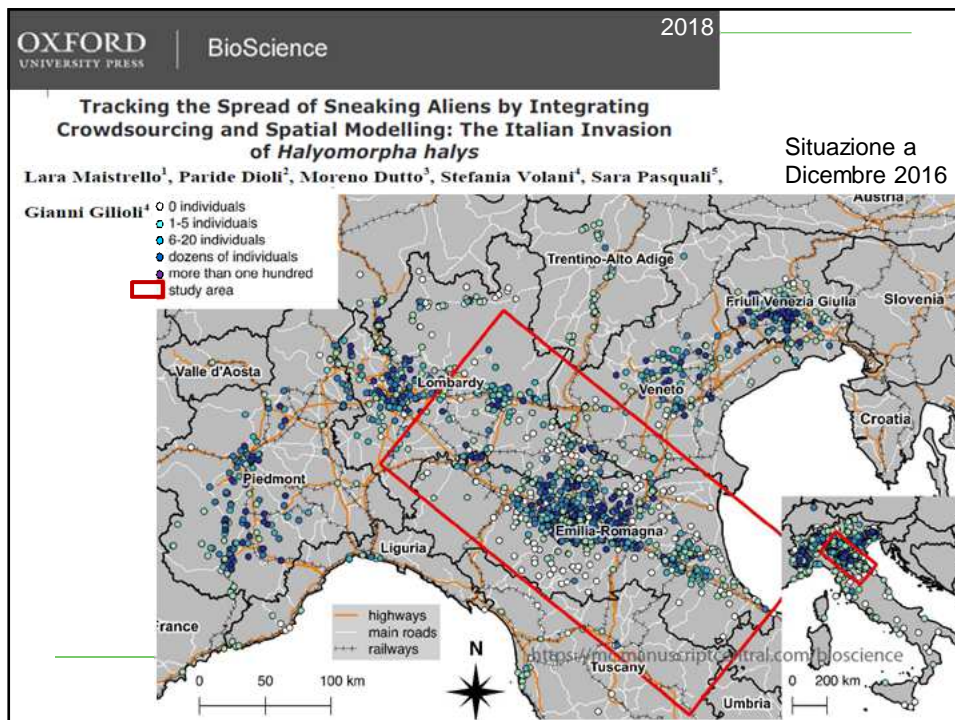
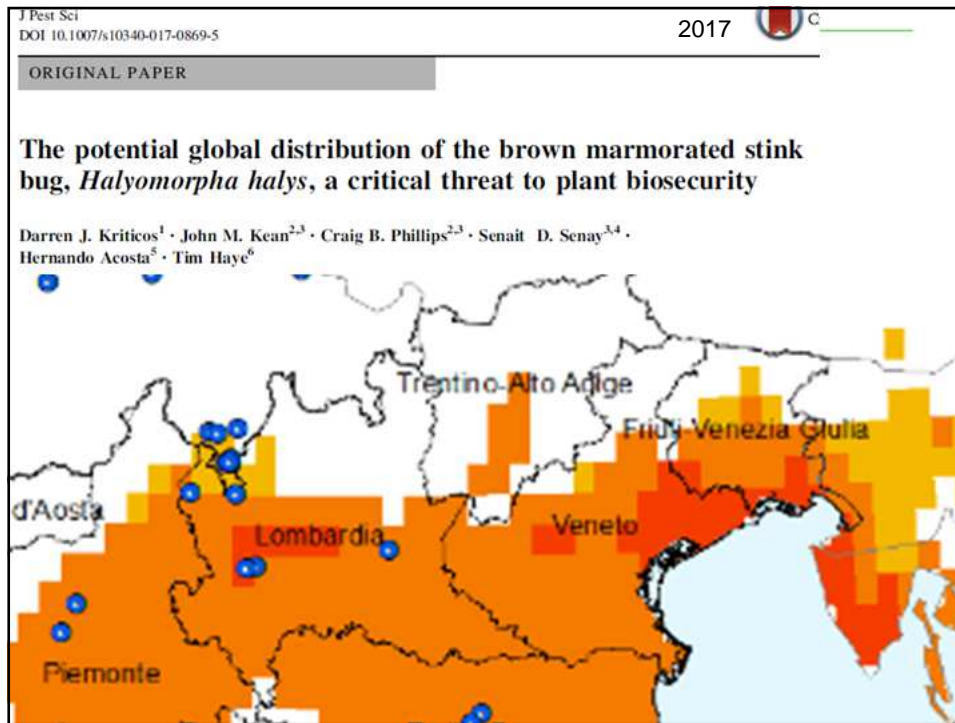
Latest updates

- Added onshore treatment provider information
- Additional detail added regarding target high risk and target risk goods
- Added information on subscribing to Import Industry Advice Notices
- Added Frequently asked questions document

Related pages

- Cargo pests awareness video
- Cargo pests identification guide
- See. Secure. Report.





Biologia

- 5 stadi giovanili senza ali
- Adulto alato e abile volatore



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Biologia

- Gli adulti svernanti dopo un breve periodo di alimentazione si accoppiano e iniziano a deporre le uova



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 Agenzia regionale per lo sviluppo rurale

Biologia

- Gli adulti svernanti dopo un breve periodo di alimentazione si accoppiano e iniziano a deporre le uova



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Primi stadi di sviluppo

Ovatura: in genere 28 uova



Actinidia

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Primi stadi di sviluppo

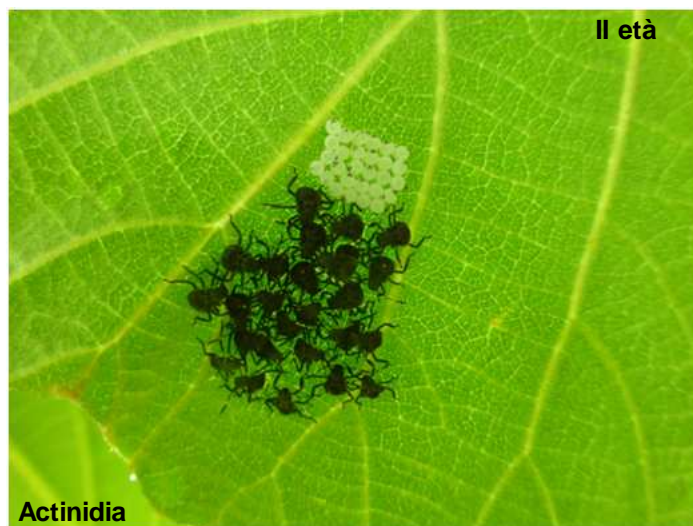


I età

Actinidia



Primi stadi di sviluppo



II età

Actinidia



Stadi giovanili - molto mobili e polifagi



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Stadi giovanili - molto mobili e polifagi



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Stadi giovanili - molto mobili e polifagi



III età



Stadi giovanili - molto mobili e polifagi



IV età

Acero



Stadi giovanili - molto mobili e polifagi



V età

Gelso

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Agenzia regionale per lo sviluppo rurale

Adulti - molto mobili e abili volatori



Adulto neosfarfallato

Soia

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Agenzia regionale per lo sviluppo rurale

Adulti - molto mobili e abili volatori



Ulivo

Adulto

ersa Ente Nazionale per lo Sviluppo Rurale
 Agenzia regionale per lo sviluppo rurale

Journal of Integrated Pest Management 2014 OPEN ACCESS

PROFILES

Biology, Ecology, and Management of Brown Marmorated Stink Bug (Hemiptera: Pentatomidae)

Kevin B. Rice,^{1,2} Chris J. Bergh,³ Erik J. Bergmann,⁴ Dave J. Biddinger,¹ Christine Dieckhoff,⁵ Galen Dively,⁴ Hannah Fraser,⁶ Tara Garipey,⁷ George Hamilton,⁸ Tim Haye,⁹ Ames Herbert,¹⁰ Kim Hoelmer,¹¹ Cerruti R. Hooks,⁴ Ashley Jones,⁴ Greg Krawczyk,¹ Thomas Kuhar,¹² Holly Martinson,⁴ William Mitchell,¹ Anne L. Nielsen,⁸ Doug G. Pfeiffer,¹² Michael J. Raupp,⁴ Cesar Rodriguez-Saona,⁸ Peter Shearer,¹³ Paula Shrewsbury,⁴ P. Dilip Venugopal,⁴ Joanne Whalen,¹⁴ Nik G. Wiman,¹³ Tracy C. Leskey,¹⁵ and John F. Tooker¹

- Tantissime piante ospiti
- Considerata una specie delle piante arboree non disdegna però neppure le piante erbacee
- Ailanto, Paulonia, Acero e Frassino piante importanti nella fase di diffusione sul territorio
- Polifaga con necessità di alimentarsi su specie differenti da cui dipende il livello di sopravvivenza
- Maggiore presenza sui bordi degli appezzamenti

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- presenza su diverse piante ospiti



Acero

ersa Ente Regionale per lo Sviluppo Rurale

- presenza su diverse piante ospiti



Ailanto

- presenza su diverse piante ospiti



Pioppo

- presenza su diverse piante ospiti




Fitolacca

Annual Review of Entomology 2018

Impact of the Invasive Brown Marmorated Stink Bug in North America and Europe: History, Biology, Ecology, and Management

Tracy C. Leskey^{1,*} and Anne L. Nielsen²

- Temperatura di volo >15°C
- Distanza di volo:
 - l'85% degli individui percorre circa 5 km al giorno
 - distanza massima 117 km in un giorno
- Distanza percorsa dai giovani:
 - 5 età fino a 20 metri in 4 ore
- Spostamenti funzionali ai fabbisogni alimentari

ersa  Sistema Nazionale di Assistenza all'Impresa Agricola
Agenzia regionale per lo sviluppo rurale

- Esempi:
(5 km di lato)

USA



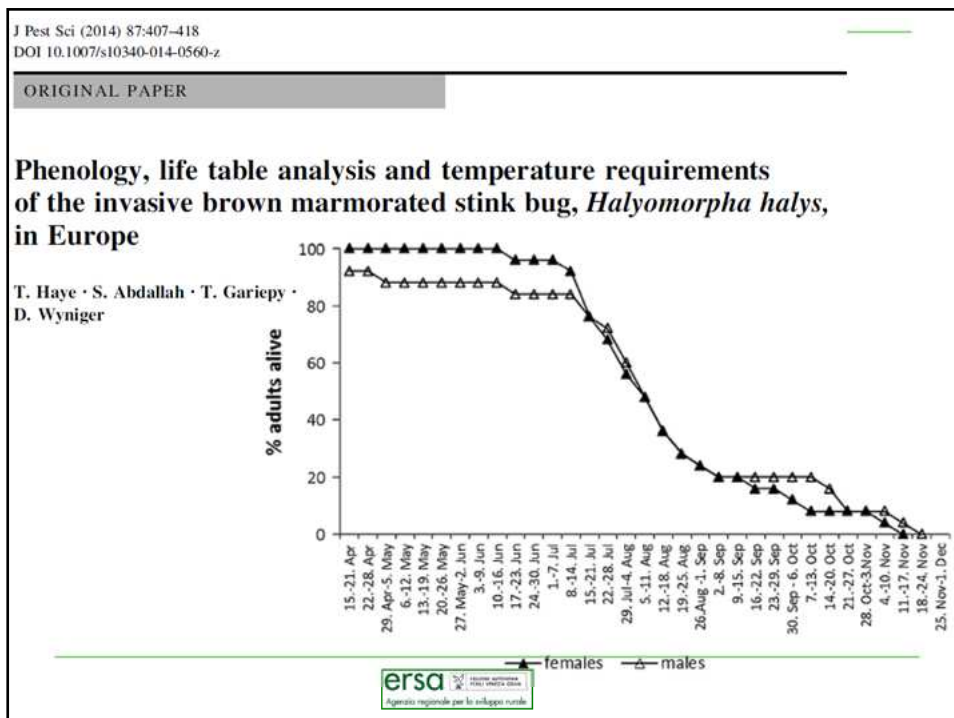
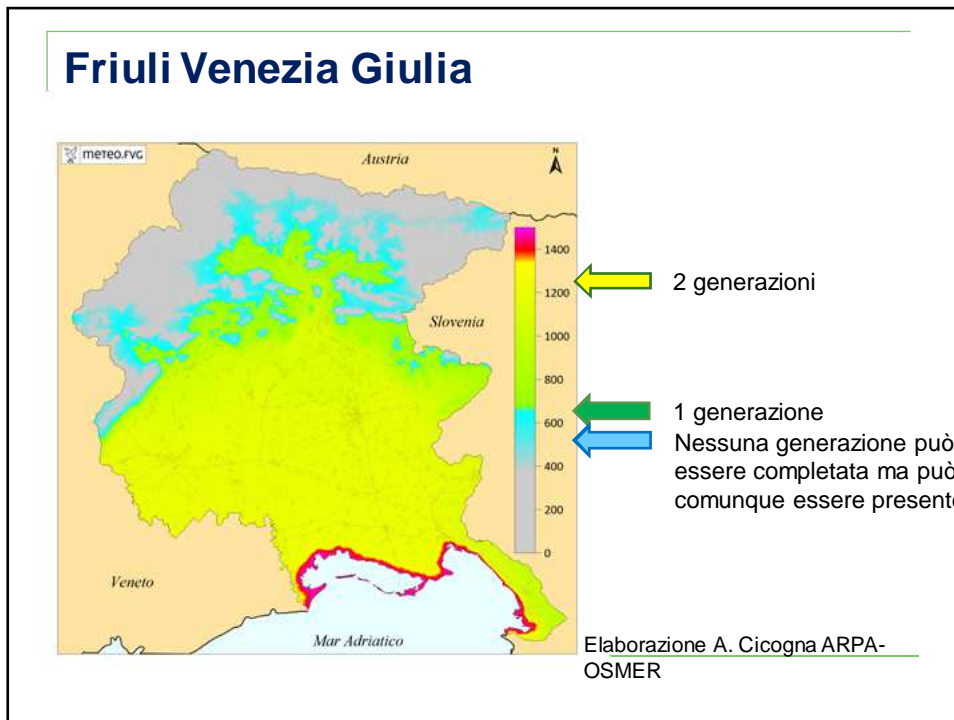


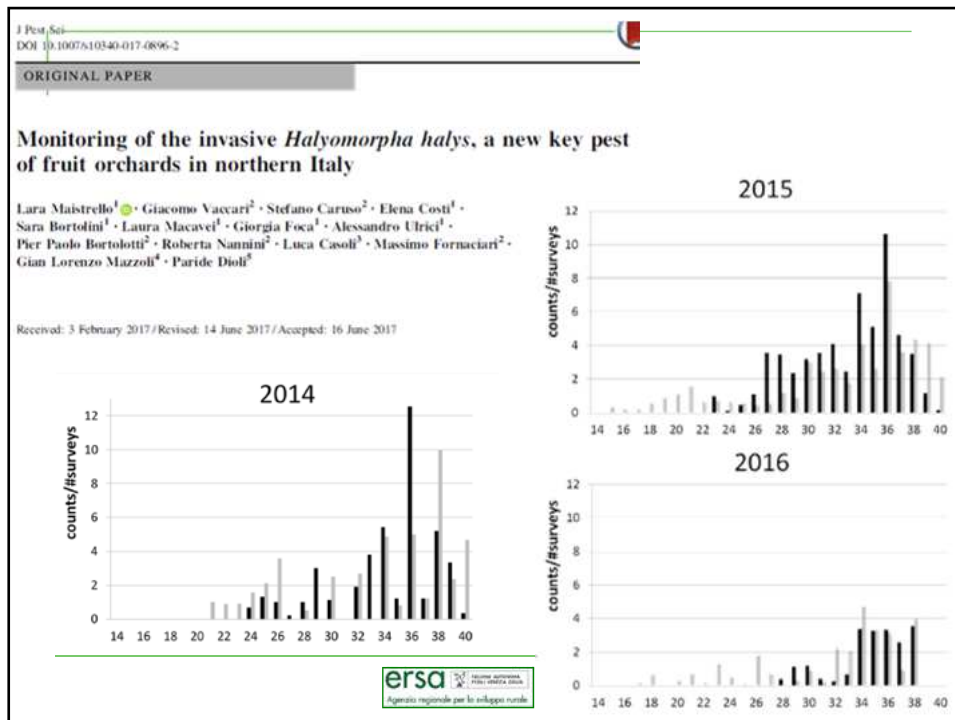
Annual Review of Entomology 2018

Impact of the Invasive Brown Marmorated Stink Bug in North America and Europe: History, Biology, Ecology, and Management

Tracy C. Leskey^{1,*} and Anne L. Nielsen²

- **Temperatura di volo >15°C**
- **Numero di generazioni:**
 - determinato dalla temperatura (necessari 685 Gradi Giorno base 14°C)
 - e dal fotoperiodo (quando scende sotto le 13,5 h smettono di ovideporre)





Halyomorpha halys, a serious threat for hazelnut in newly invaded areas

Lara Bosco¹ · Silvia T. Moraglio¹ · Luciana Tavella¹

Journal of Pest Science (2018) 91:661–670 665

Table 2 Mean percentages (\pm SE) of kernels damaged by bugs, shriveled, and moldy per cage in the presence of the tested bug species and in the absence of insects (control)

Species	No. of cages ^a	No. of nuts ^b	% Of total damaged kernels ^c	% On total damaged kernels ^d		% Of other defects	
				External	Brown	Shriveled	Moldy/rotten
<i>Halyomorpha halys</i>	54	532	74.82 \pm 4.14a	80.53 \pm 3.24a	87.69 \pm 2.24b	19.60 \pm 3.06a	10.22 \pm 2.44a
<i>Gonocerus acutaeangulatus</i>	53	580	39.07 \pm 4.49c	78.02 \pm 4.28a	92.59 \pm 3.42a	5.08 \pm 1.80c	5.50 \pm 1.39ab
<i>Nezara viridula</i>	58	579	57.03 \pm 4.31b	61.67 \pm 4.21b	80.39 \pm 3.43b	19.73 \pm 3.96a	6.03 \pm 1.71b
<i>Palomena prasina</i>	59	568	39.49 \pm 3.94c	56.79 \pm 5.01b	84.72 \pm 3.91b	10.26 \pm 2.75b	0.75 \pm 0.33c
Control	30	295	0.00 \pm 0.00d	–	–	5.91 \pm 3.68c	1.56 \pm 1.23c
GLM	Wald χ^2		81,708.480	72.323	18.988	69.459	38.313
	df		3	3	3	4	4
	P		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

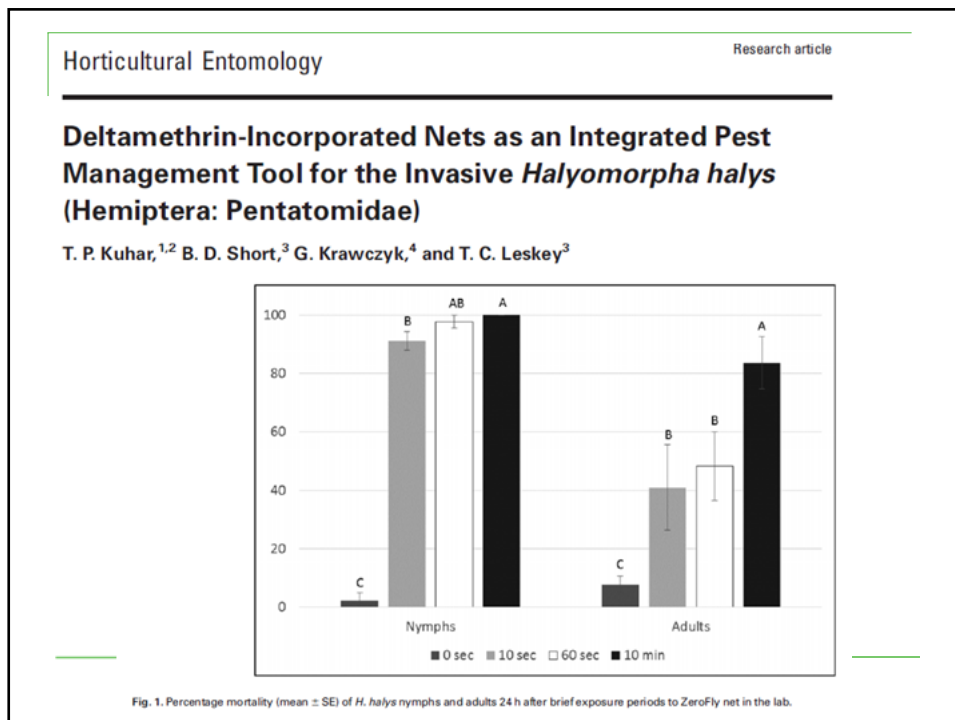
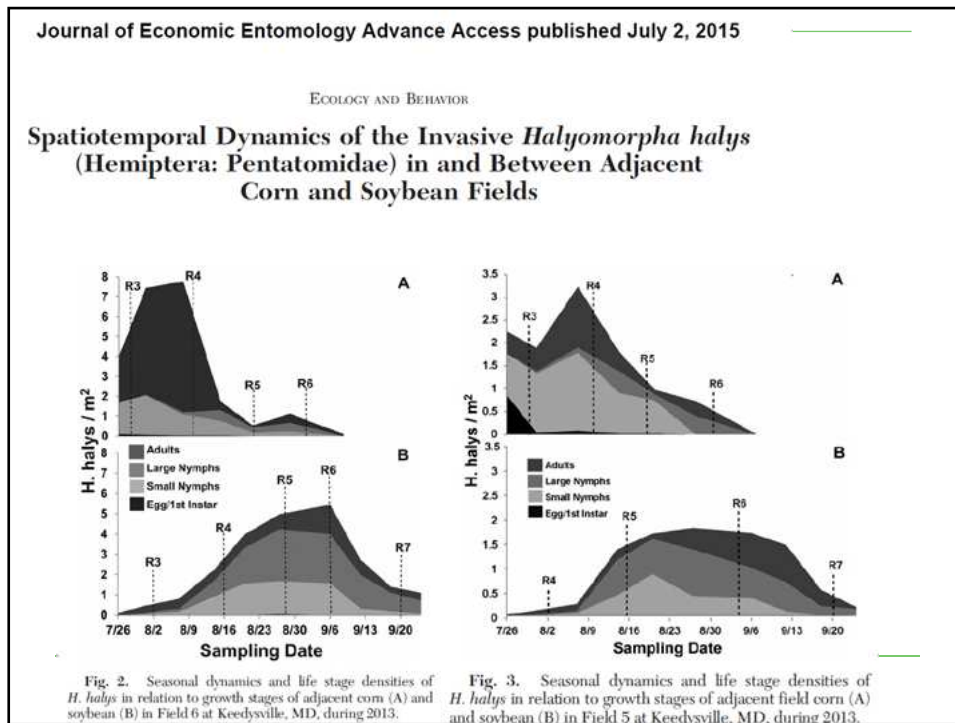
In each column, values followed by the same letter are not significantly different (Bonferroni test, $P < 0.05$, under GLM procedure with binomial distribution and logit link)

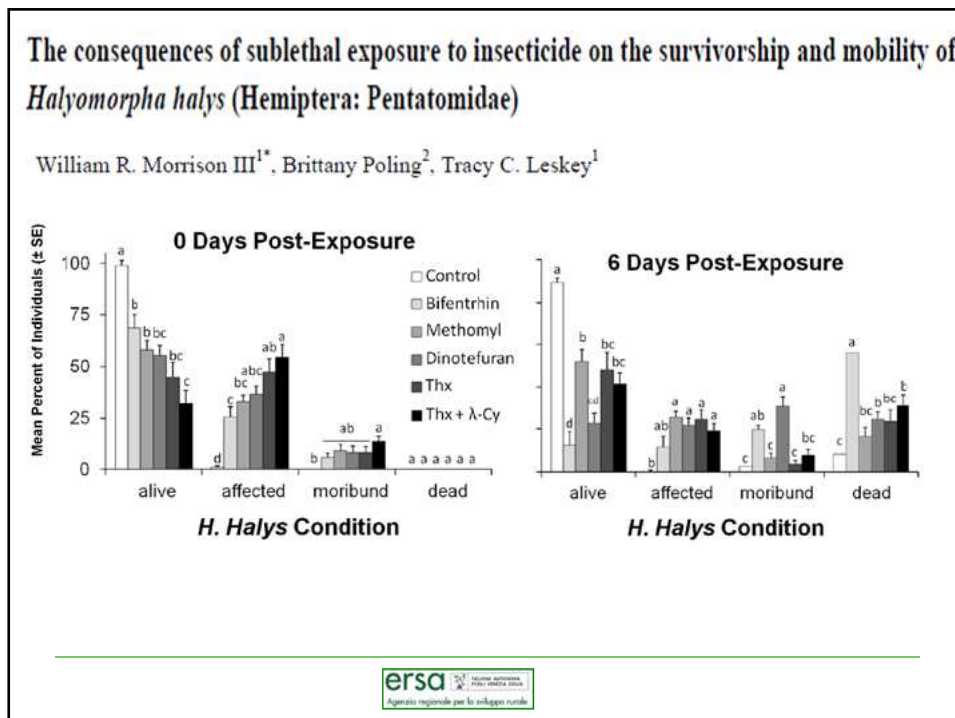
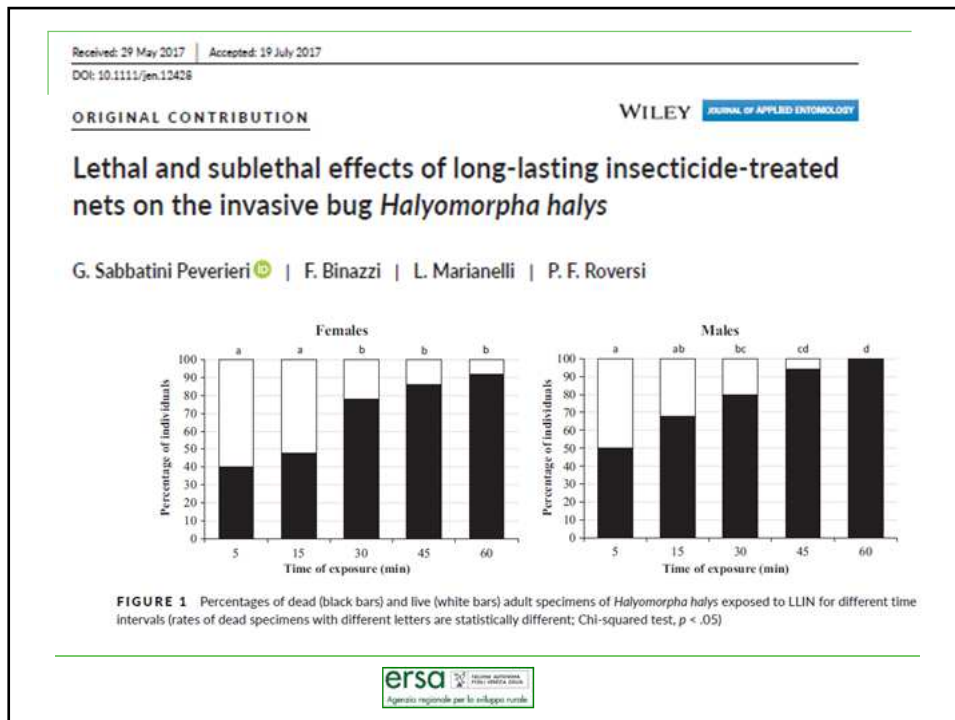
^aTotal number of cages (excluding cages containing only blank nuts)

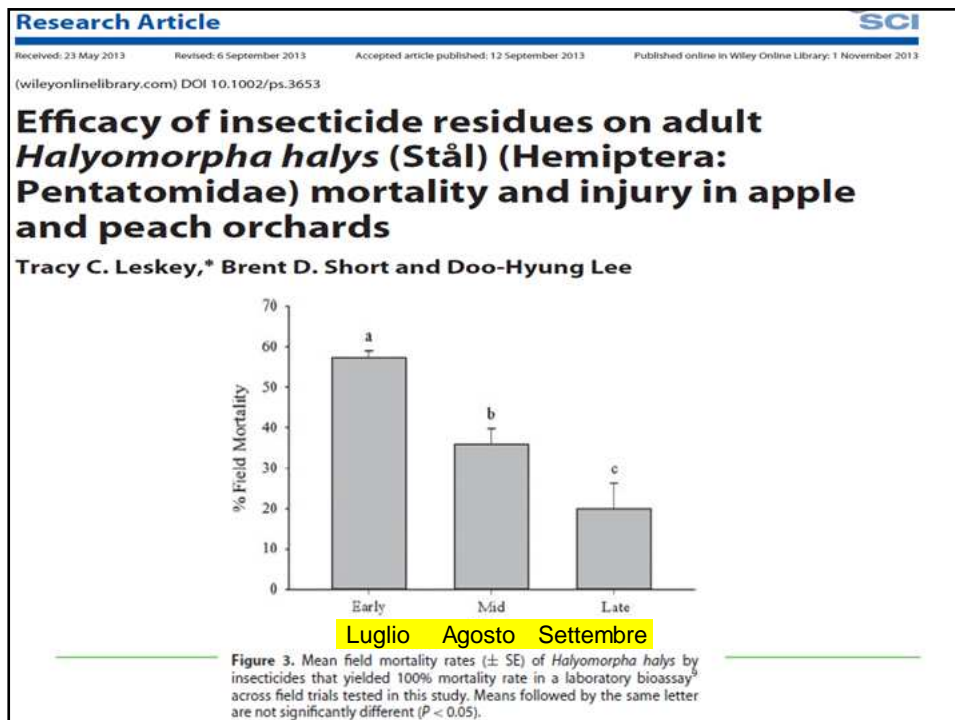
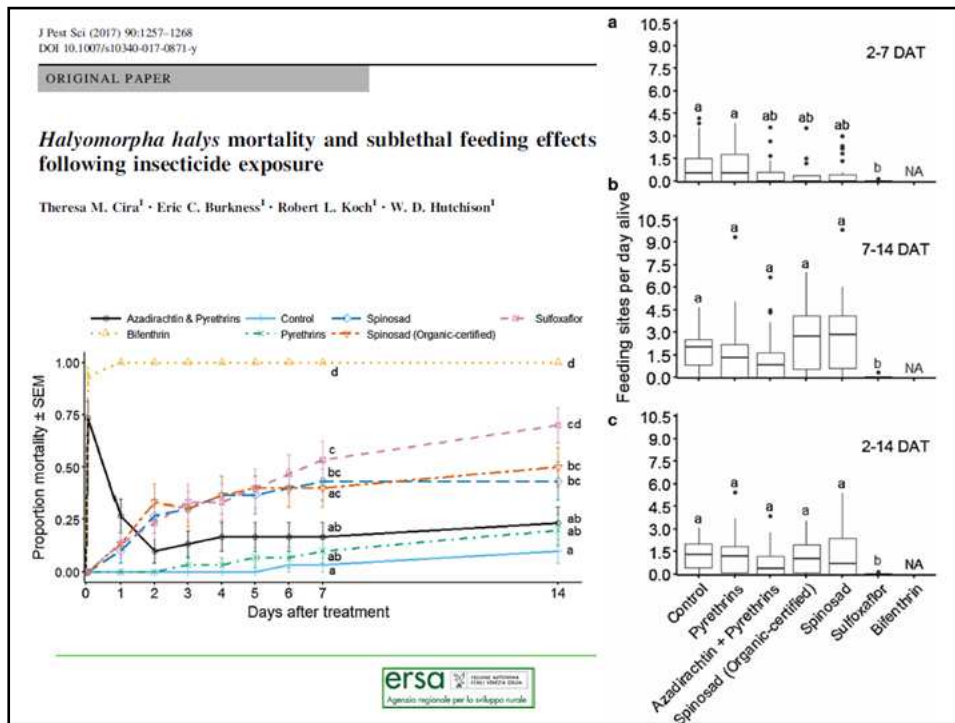
^bTotal number of analyzed kernels

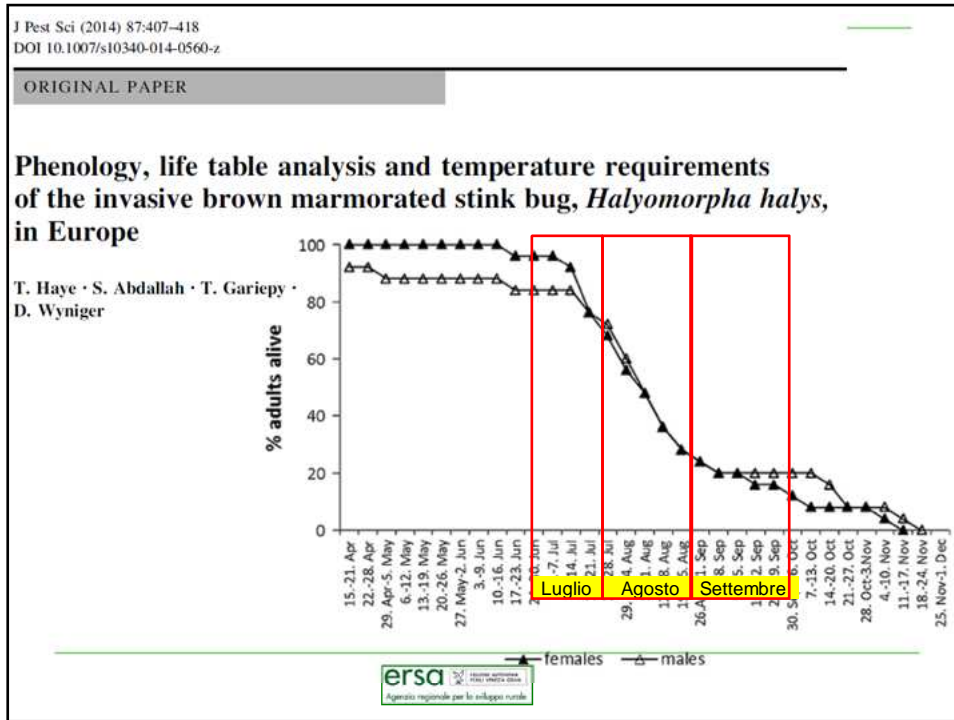
^c% Of total damaged kernels on total number of analyzed kernels

^d% Of kernels showing external (versus internal) and brown (versus white) symptoms on total damaged kernels









J Pest Sci (2015) 88:693–705
DOI 10.1007/s10340-015-0671-1

ORIGINAL PAPER

Journal of Pest Science
<https://doi.org/10.1007/s10340-018-0969-x>

ORIG REDIA, XCIX, 2016: XX-XX <http://dx.doi.org/10.19263/REDIA-99.16.01>

Biological Control 78 (2014) 61–66
Contents lists available at ScienceDirect
Biological Control
journal homepage: www.elsevier.com/locate/ybcon

REDIA (*)
PINO (*)
NEW SPECIES (*)

Sentinel eggs under marmorated stink bug
Ashley L. Jones, David ...
Department of Entomology, University ...

HIGHLIGHTS

- We compared parasitism of wild (field-laid) and sentinel (laboratory-laid) eggs.
- Wild egg masses had higher parasitism, parasitoid abundance and species richness.
- *Anastatus reduvii* was the most common parasitoid species over sentinel egg masses underestimating parasitoid communities and impact.
- Wild egg masses should be used to estimate biological control impacts.

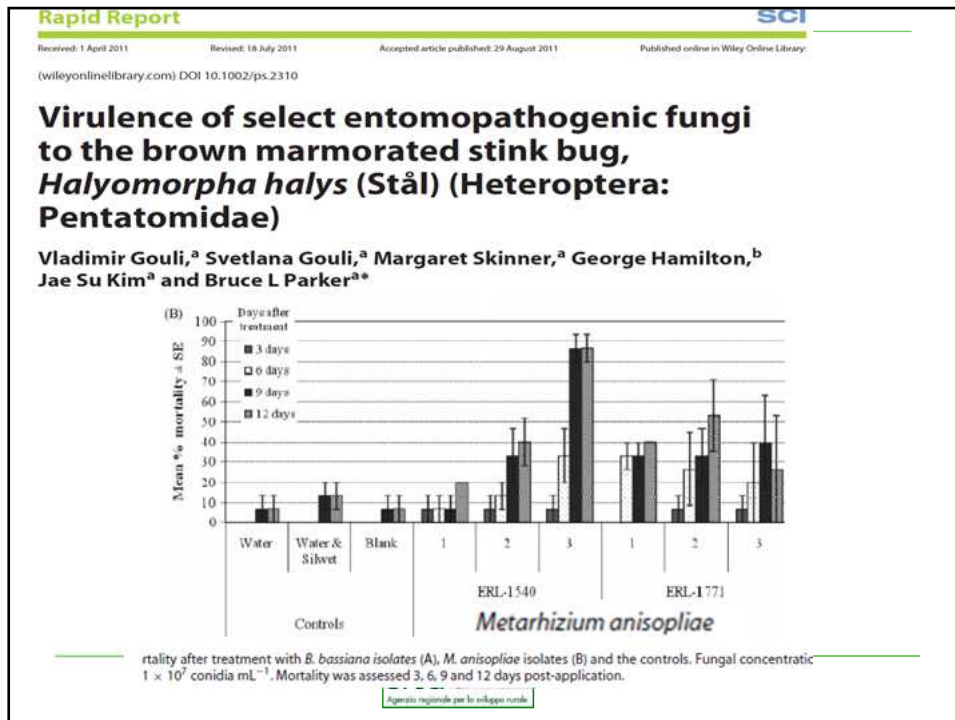
Biol Invasions (2014) 16:1387–1395
DOI 10.1007/s10530-013-0576-y

ORIGINAL PAPER

An invasive stink bug as an evolutionary trap for an indigenous egg parasitoid

P. K. Abram · T. D. Garipey · G. Boivin · J. Brodeur

ersa logo: Agente registrato per lo sviluppo rurale




J Pest Sci
DOI 10.1007/s10340-017-0862-z

ORIGINAL PAPER

Use of substrate-borne vibrational signals to attract the Brown Marmorated Stink Bug, *Halyomorpha halys*

Valerio Mazzoni¹ · Jernej Polajnar^{1,2} · Marta Baldini³ · Marco Valerio Rossi Stacconi¹ · Gianfranco Anfora^{1,4} · Roberto Guidetti³ · Lara Maistrello³



Exploitation of the acoustic communication in *Halyomorpha halys* for the development of innovative trapping tools



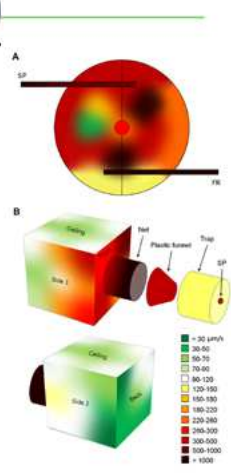




Fig. 4. Vibrational amplitude field of the Test 3 arena (a) and the Test 4 cage (b). The analysis is based on 19 and 41 audio sampling points, respectively (see Online Resource 2 and 3). SP stimulation point. *FB* formal (non-stimulated) real

V. Mazzoni, J. Polajnar, V. Rossi Stacconi, G. Anfora (Fondazione Edmund Mach)
M. Baldini, V. L. Maistrello (UniMORE)

 J. Dairy Sci. 97:1877–1884
<http://dx.doi.org/10.3168/jds.2013-7545>
© American Dairy Science Association®, 2014.

Hot topic: Brown marmorated stink bug odor compounds do not transfer into milk by feeding bug-contaminated corn silage to lactating dairy cattle

R. L. Baldwin VI,[†] A. Zhang,[†] S. W. Fultz,[‡] S. Abubeker,[†] C. Harris,[†] E. E. Connor,^{*} and D. L. Van Hekken[§]

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY Article
pubs.acs.org/JAFC

Influence of Winemaking Processing Steps on the Amounts of (E)-2-Decenal and Tridecane as Off-Odorants Caused by Brown Marmorated Stink Bug (*Halyomorpha halys*)

Pallavi Mohekar,[†] James Osborne,[†] Nik G. Wiman,[‡] Vaughn Walton,[‡] and Elizabeth Tomasino^{§†}

[†]Department of Food Science & Technology, Oregon State University, 100 Wiegand Hall, Corvallis, Oregon 97331, United States
[‡]Department of Horticulture, Oregon State University, 4017 Agriculture and Life Sciences Building, Corvallis, Oregon 97331, United States

 Supporting Information

 ersa Ente Nazionale per lo Sviluppo Rurale

