

## *Hadronotus pennsylvanicus* (Ashmead)

# Effects of Some Selective Hemipteran-Targeting Insecticides and One Broad-Spectrum Insecticide on the Parasitoid *Hadronotus Pennsylvanicus*, 2018

Sean Boyle,<sup>1,○</sup> Thomas P. Kuhar,<sup>1,3,○</sup> James Wilson,<sup>1,○</sup> and Donald C. Weber<sup>2</sup>

<sup>1</sup>Virginia Tech Department of Entomology, 170 Drillfield Drive, Price Hall Rm 216A, Blacksburg, VA 24061-0319, USA,

<sup>2</sup>USDA Agricultural Research Service, Invasive Insect Biocontrol & Behavior Laboratory, Bldg. 007 Room 324, BARC-West,

Beltsville, MD 20705, USA, and <sup>3</sup>Corresponding author, e-mail: [tkuhar@vt.edu](mailto:tkuhar@vt.edu)

Section Editor: Michelle Brown

Yellow squash fruit | *Cucurbita pepo*

*Hadronotus pennsylvanicus* (Ashmead)

*Hadronotus pennsylvanicus* (formerly *Gryon pennsylvanicum*) (Ashmead) (Hymenoptera: Scelionidae) is an important egg parasitoid of squash bug, *Anasa tristis* (DeGeer) (Hemiptera: Coreidae) and other leaf-footed (coreid) bug pests. Bioassay experiments were conducted to evaluate the mortality caused by several selective hemipteran-targeting insecticides and one broad-spectrum insecticide on *H. pennsylvanicus* adults. Treatments included Beleaf, Sivanto, PQZ, Transform, Lambda-cy, and a water-only check (Table 1). Squash bug egg masses were collected from summer squash (*Cucurbita pepo*) at Virginia Tech's Kentland Research Farm in Whitethorne, VA in Aug 2018 and held in cages until *H. pennsylvanicus* adults emerged. Filter paper discs (90 mm diameter) were dipped in insecticide solution allowed to dry for 1 h. Parasitoid wasps were aspirated within 1–2 d of emergence into

30-ml Falcon centrifuge tubes, attempting to get at least five wasps per tube (depending on availability at the time of each rep). The treated filter paper was rolled and carefully slipped into the Falcon tube with the wasps. Mortality of the wasps was recorded at 24, 48, and 72 h after exposure. Ten repetitions were conducted for each insecticide treatment. Proportion mortality data were arcsine square-root transformed to normalize variances then analyzed using a one-way ANOVA followed by Fisher's protected LSD to separate means.

There was a significant effect of treatment on mortality of *H. pennsylvanicus* adults at 24, 48, and 72 h. Lambda-cy had the highest mortality followed by Transform, and these were the only two treatments that were significantly higher than the water control after 72 h.<sup>1</sup>

**Table 1.**

Treatment	Rate/acre	Mortality (%)		
		24 h	48 h	72 h
Lambda-cy	16.4 <sup>a</sup>	75.1a	84.6a	88.2a
Transform WG	1.0 <sup>b</sup>	23.0b	48.0b	72.0ab
Sivanto HL	7.0 <sup>a</sup>	2.0c	15.7c	37.7c
PQZ	3.2 <sup>a</sup>	4.0bc	26.0bc	48.0bc
Beleaf	2.4 <sup>b</sup>	10.0bc	28.0bc	50.0bc
Water	—	10.0bc	18.0bc	35.0c

Data within columns followed by a letter in common are not significantly different;  $P < 0.05$ .

<sup>a</sup>fl oz of product per acre.

<sup>b</sup>oz of product per acre.

<sup>1</sup>This research was supported in part by industry gifts of insecticides. Additional funding was provided by 2020 USDA Southern SARE Research & Education Grant 604157 'Development and evaluation of IPM systems components for insect pests and pathogens of cucurbit crops in the southeastern United States'.