

BMSB Feeding and Mortality Study – 2017-18

Comparative Efficacy of Insecticides Using Topical & Field Applied Treatments (Fruit Residue)



2018: Adult BMSB Topical Bioassay

- Brown marmorated stink bug (BMSB) adults were separated into individual cups, **male and female**
- Individuals received a **2 uL application of distilled DI water, 0.25% LI700, or insecticide w/LI700** to the dorsal thoractic plate.
 - Treatments: **Surround WP plus 1% Hort. Oil, Actara, Bifenthrin, Closer, Venerate & UTC**
 - **Doses: 1.0, 0.5, and 0.25** times the highest product labeled rate
- Status (**alive / moribund or dead**) was recorded **at 24, 48 hours and 7d** post treatment of three dose responses in the following data set.
- Treated and untreated adult BMSB field placement onto treated and untreated fruit from September 19th to 24th found high mortality due to very high temperatures field temperatures. Field trials did not provide a second year of data for this experiment.

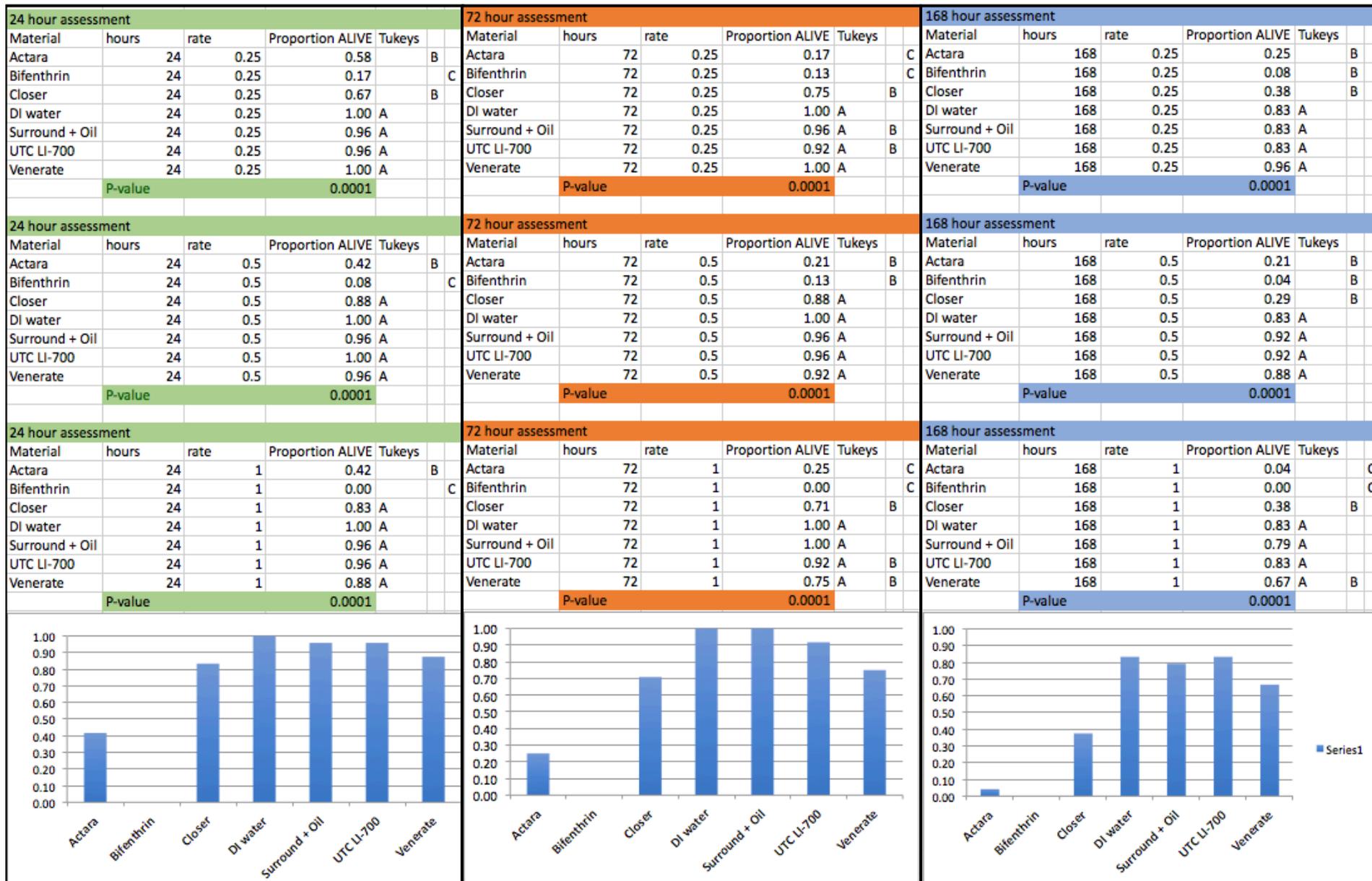


Graph 1. Survival of BMSB Employing Highest Labeled Rate For Each Product Tested.

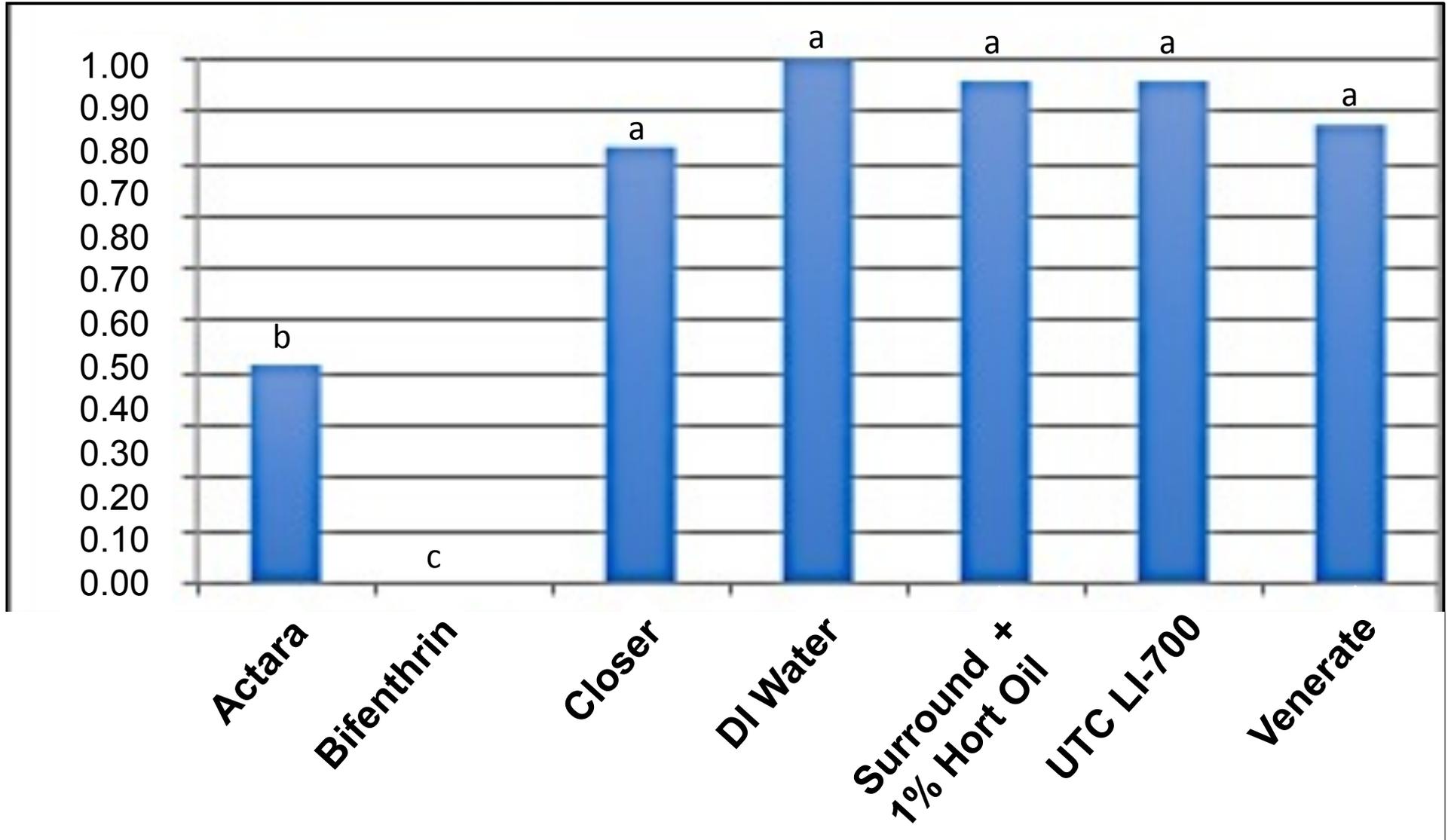
24 Hour

48 Hour

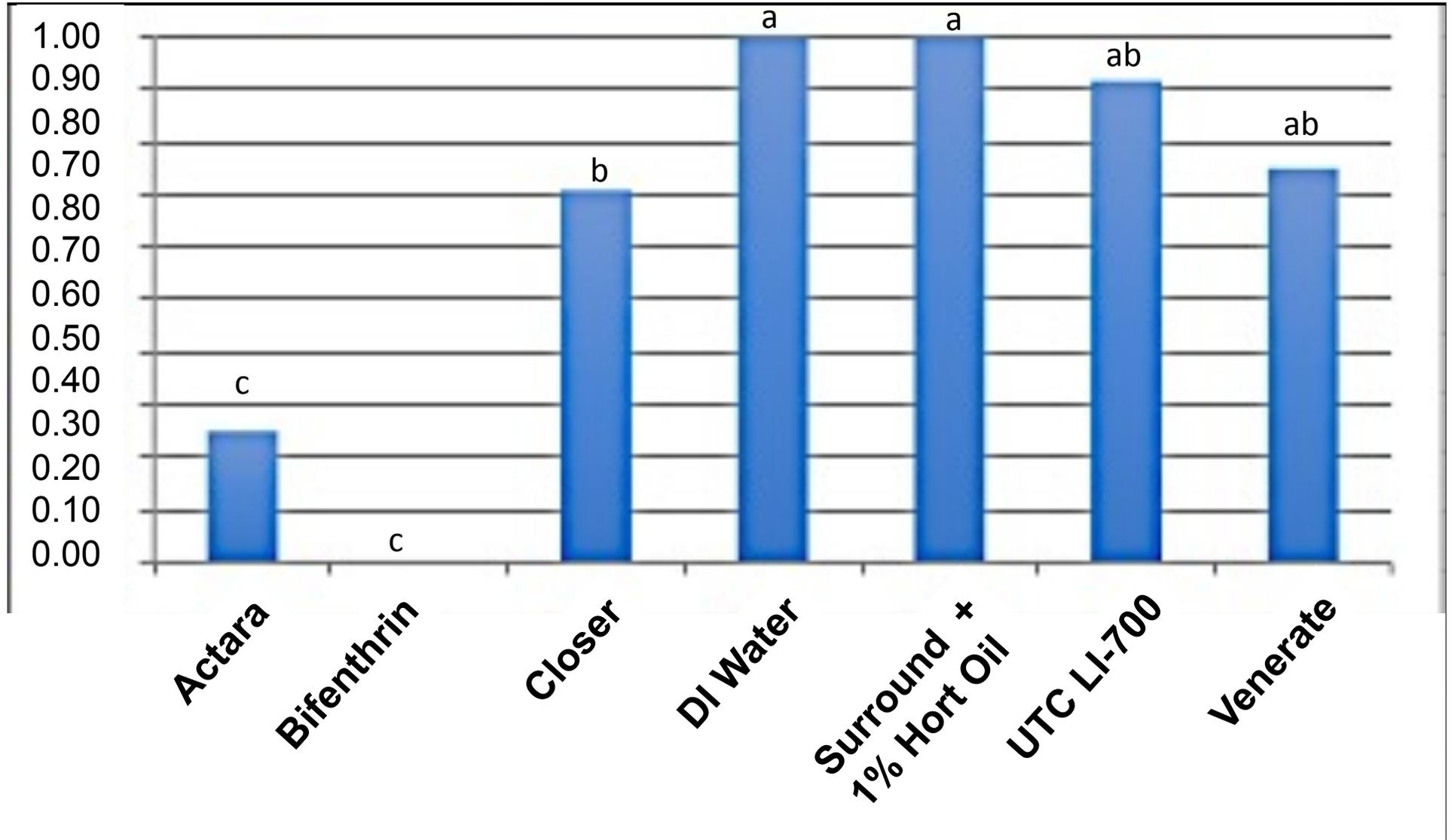
7 Day



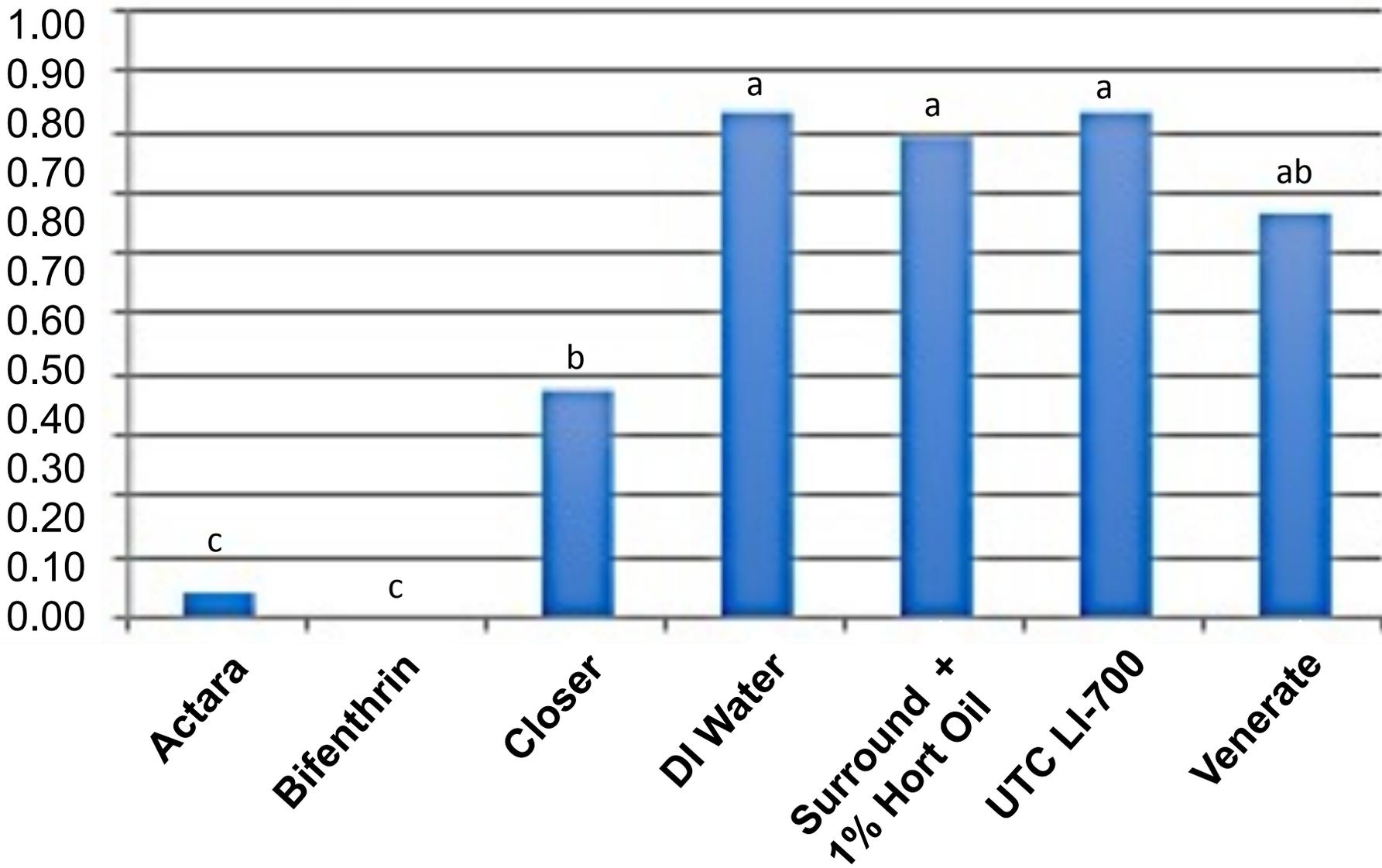
Graph 1. Survival of BMSB Employing Highest Labeled Rate For Each Product Tested Over 24-Hours.



Graph 1. Survival of BMSB Employing Highest Labeled Rate For Each Product Tested Over 48-Hours.



Graph 1. Survival of BMSB Employing Highest Labeled Rate For Each Product Tested Over 7-Days.



2017: Adult BMSB Topical Bioassays

- Brown marmorated stink bug (BMSB) adults were separated into individual cups, **male and female**
- Individuals **received 2 uL of distilled water, 0.25% LI700**, individual insecticide to the dorsal thoractic plate.
 - Treatments: **Actara, Bifenthrin, Closer, Venerate, UTC**
 - **Doses: 1, 0.5, 0.25, and 0.1** times the highest labeled rate
- Status (**alive, moribund, dead**) was recorded at **24, 48, 72 hours** and at **7d** post treatment.



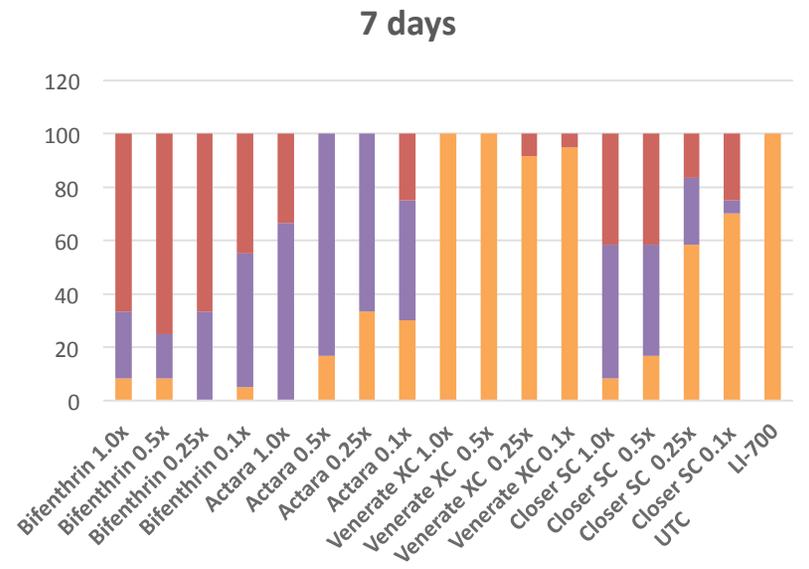
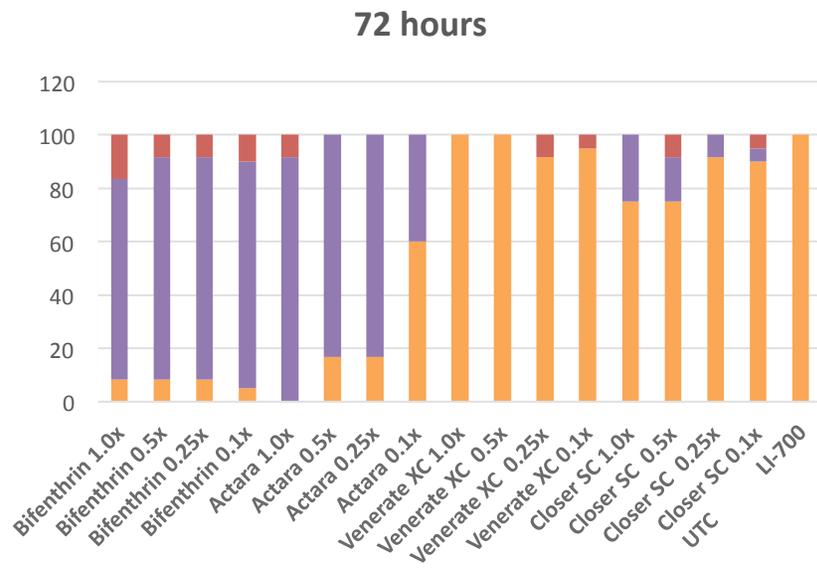
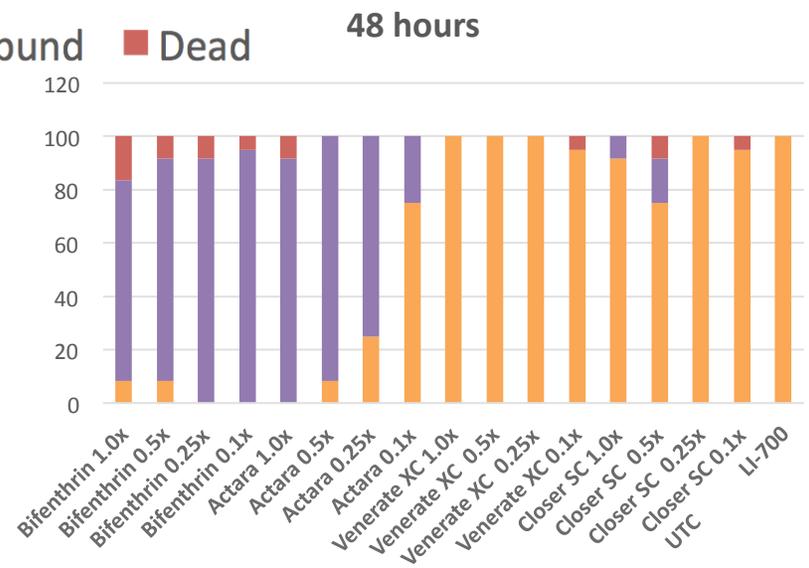
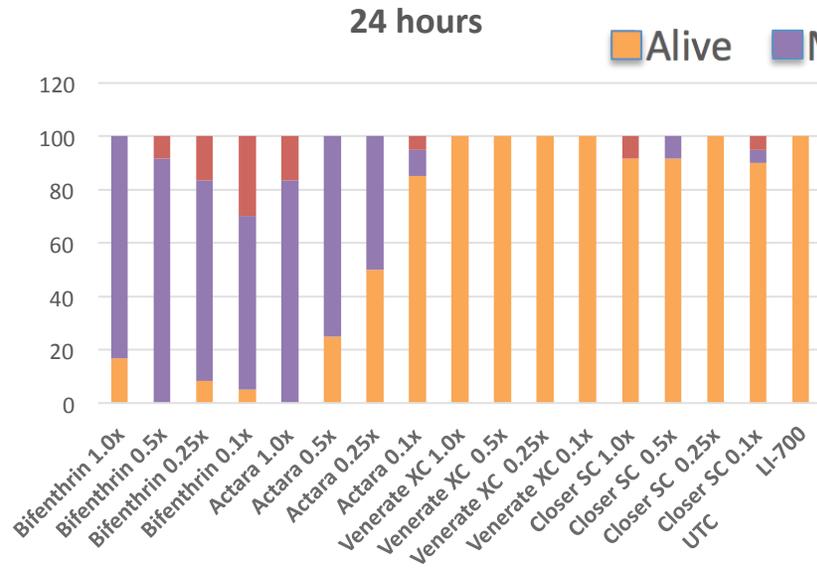


BMSB Adult Topical Treatment

- Applications to BMSB adults on 28th Sept. 2017
- Placed on the tree in 10 replicates for each treatment
- BMSB were removed after 7d and evaluated for mortality
- Fruit was collected on 12th October
- Fruit feeding evaluations to assess feeding injury
- Evaluated 'arena' for surface dimpling,



Topical Bioassays



BMSB Adult Topical Treatment

BMSB treated topically on Sep.28, 2017 and placed on apples for 7 days.

	Number of feeding sites per fruit	Dimpling per fruit	Corking per fruit	Clean fruit (%)	Survival (%)
Closer SC	0.3a	0.2a	0.2a	90a	30b
Bifenthrin	0.1a	0a	0a	90a	0b
Actara	0a	0a	0a	100a	10b
Venerate	0a	0a	0a	100a	100a
UTC	0.9a	0a	0a	60a	90a
Kruskal-Walis Test, Prob>ChiSq	0.1288	0.5348	0.5348	0.1093	<.0001

Means followed by the same letter are not significantly different by Steel-Dwass Method at $\alpha=0.05$ Apples were rated on Oct.12, 2017. BMSB survival were recorded 7 days after exposure to the fruit.

2017 Field Application

Applications using tractor mounted sprayer on 20th Sept. 300 psi. handgun applications:

• Closure SC	7d PHI	5.75 fl.oz./A
• Bifenthrin SC	14d PHI	32.0 fl.oz./A
• Actara 25 WDG	14d PHI	5.5 oz./A
• Venerate XC	0d PHI	128.0 fl.oz./A



- BMSB adults placement beginning on 20th Sept.
 - 24h; 48hr; 72hr placement. Collection made after 7d of placement.
 - Insects placed in screened portion cups onto the north side of fruit to reduce sun exposure with arena defined using marker.
 - Fruit harvested on 12 Oct. for fruit feeding evaluations

Field Application: Fruit Residue

BMBS placed on apples 24 hours after pesticide application on Sep.20, 2017.

	Number of feeding sites per fruit	Dimpling per fruit	Corking per fruit	Clean fruit (%)	Survival (%)
Closer SC	0.1a	0.1a	0.1a	90a	0a
Bifenthrin	0a	0a	0a	100a	0a
Actara	0a	0a	0a	100a	0a
Venerate	0a	0a	0a	100a	20a
UTC	0.7a	0a	0a	50a	20a
Kruskal-Walis Test, Prob>ChiSq	0.0115	0.8123	0.8123	0.0136	0.3071

Means followed by the same letter are not significantly different by Steel-Dwass Method at $\alpha=0.05$ Apples were rated on Oct.12, 2017. BMSB survival were recorded 7 days after exposure to the fruit.

Field Application: Fruit Residue

BMBS placed on apples 48 hours after pesticide application on Sep.20, 2017.

	Number of feeding sites per fruit	Dimpling per fruit	Corking per fruit	Clean fruit (%)	Survival (%)
Closer SC	0.1b	0.1a	0.1a	90a	0a
Bifenthrin	0b	0a	0a	100a	10a
Actara	0.1b	0.1a	0.1a	90a	0a
Venerate	0.2ab	0a	0a	80ab	40a
UTC	1.2a	0.4a	0.4a	20b	0a
Kruskal-Walis Test, Prob>ChiSq	0.0001	0.4313	0.4313	0.0002	0.0873

Means followed by the same letter are not significantly different by Steel-Dwass Method at $\alpha=0.05$ Apples were rated on Oct.12, 2017. BMSB survival were recorded 7 days after exposure to the fruit.

Field Application: Fruit Residue

BMBS placed on apples 72 hours after pesticide application on Sep.20, 2017.

	Number of feeding sites per fruit	Dimpling per fruit	Corking per fruit	Clean fruit (%)	Survival (%)
Closer SC	0.2a	0.2a	0.2a	90a	80a
Bifenthrin	0.2a	0.2a	0.2a	90a	10b
Actara	0.2a	0.2a	0.2a	90a	100a
Venerate	0.1a	0a	0a	90a	70a
UTC	1.2a	0.1a	0.1a	40a	30ab
Kruskal-Walis Test, Prob>ChiSq	0.0687	0.9254	0.9254	0.0795	0.0006

Means followed by the same letter are not significantly different by Steel-Dwass Method at $\alpha=0.05$ Apples were rated on Oct.12, 2017. BMSB survival were recorded 7 days after exposure to the fruit.