

Giving Remoa A Tri

A Virginia Cage Field trial

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Suffolk Mosquito Control

Virginia

What is Remoa Tri?

- New Adulticide
- 3 Active Ingredients
 - Abamectin
 - Fenpropathrin
 - C8910
- 3 Modes of Action
- Efficacy against metabolic resistance and knockdown resistance
- Approved Label states that it is able to control Aedes and Culex resistant mosquitoes

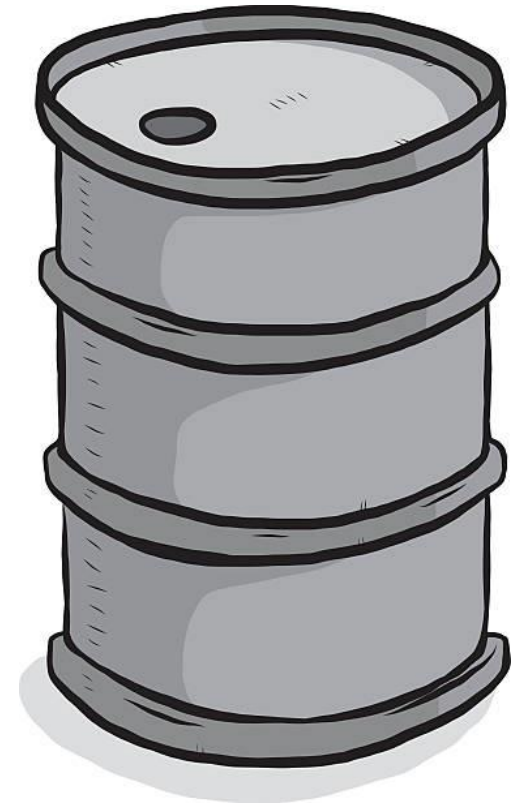


CDC Bottle Bio Assay Testing Results Overview

- 2018-2023
- Aedes Albopictus
 - Susceptible to every active ingredient tested against
 - Pyrethroid (permethrin, prallethrin, sumithrin, deltamethrin, etofenprox, synergists w/pyrethroids)
 - Organophosphate (chlorpyrifos, malthion, naled, synergists w/ pyrethroids)
- Culex pipiens
 - Pyrethroids – Resistant to all until 2023 where it was found to be Susceptible to Permethrin with PBO
 - Organophosphates
 - Susceptible to Naled
 - Resistant – Susceptible for Chlorpyrifos & Malathion

What adulticide will we use against *Culex pipiens*?

- Halted the use of pyrethroid based adulticides
 - Possibility of further increasing their resistance to it
- Began using an organophosphate based adulticide
 - MosquitoMost 2 – chlorpyrifos





**HELLO,
IS THERE
ANYBODY
IN THERE**

What is Remoa Tri?

- New Adulticide
- 3 Active Ingredients
 - Abamectin
 - Fenprothrin
 - **C8910 – Fatty acid that breaks down with acetone**
- 3 Modes of Action
- Efficacy against metabolic resistance and knockdown resistance
- Approved Label states that it is able to control Aedes and Culex resistant mosquitoes

Field Trial

- Who would be involved in the trial?
 - Suffolk, Chesapeake, Valent Bio Sciences, Azelis
- When would we spray?
 - August 2, 2023
- What we would spray?
 - Culex pipiens resistant mosquitoes
 - Remoa Tri – Abamectin, Fenpropathrin, C8910
 - Zenivex – Etofenprox
- Where we would spray?
 - Suffolk



- *Culex pipiens*
 - Chesapeake
 - Suffolk



Calibrations

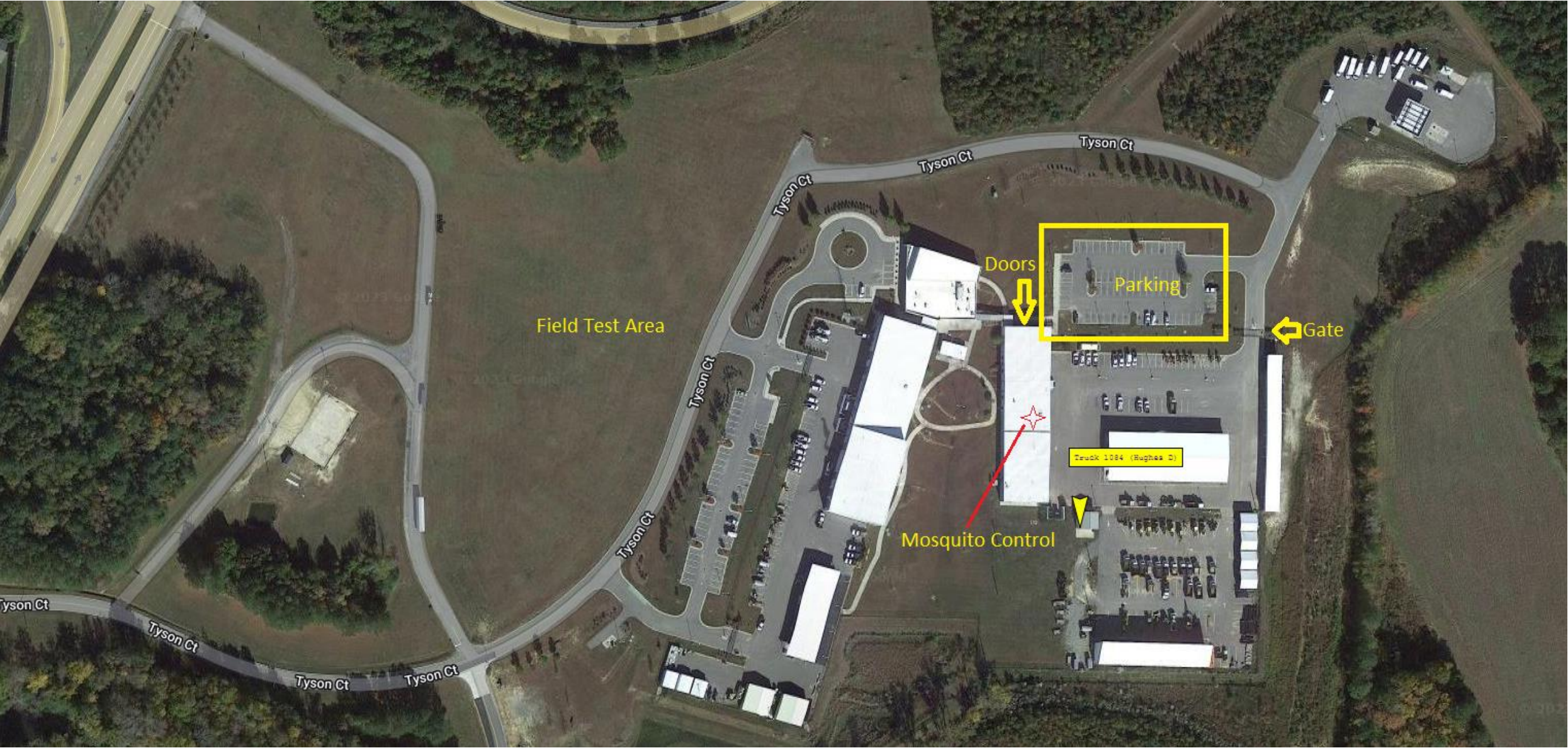


Calibrations

- Cougar Spray Machines
 - Remoa Tri flow rate of 4.8 oz/minute
 - Zenivex E20 flow rate of 3.6 oz/minute

	Application Rate (ounces/acre)	Spray Volume (ounces/acre)	Flow Rate (ounces/min)	Speed of Truck (mph)	Swath (ft)	Droplet Analysis ($DV_{0.5}$)
ReMoa Tri	0.8	0.8	4.8	10	300	15.35
Zenivex E20	0.3207	0.64	3.6	10	300	14.44

Testing Site

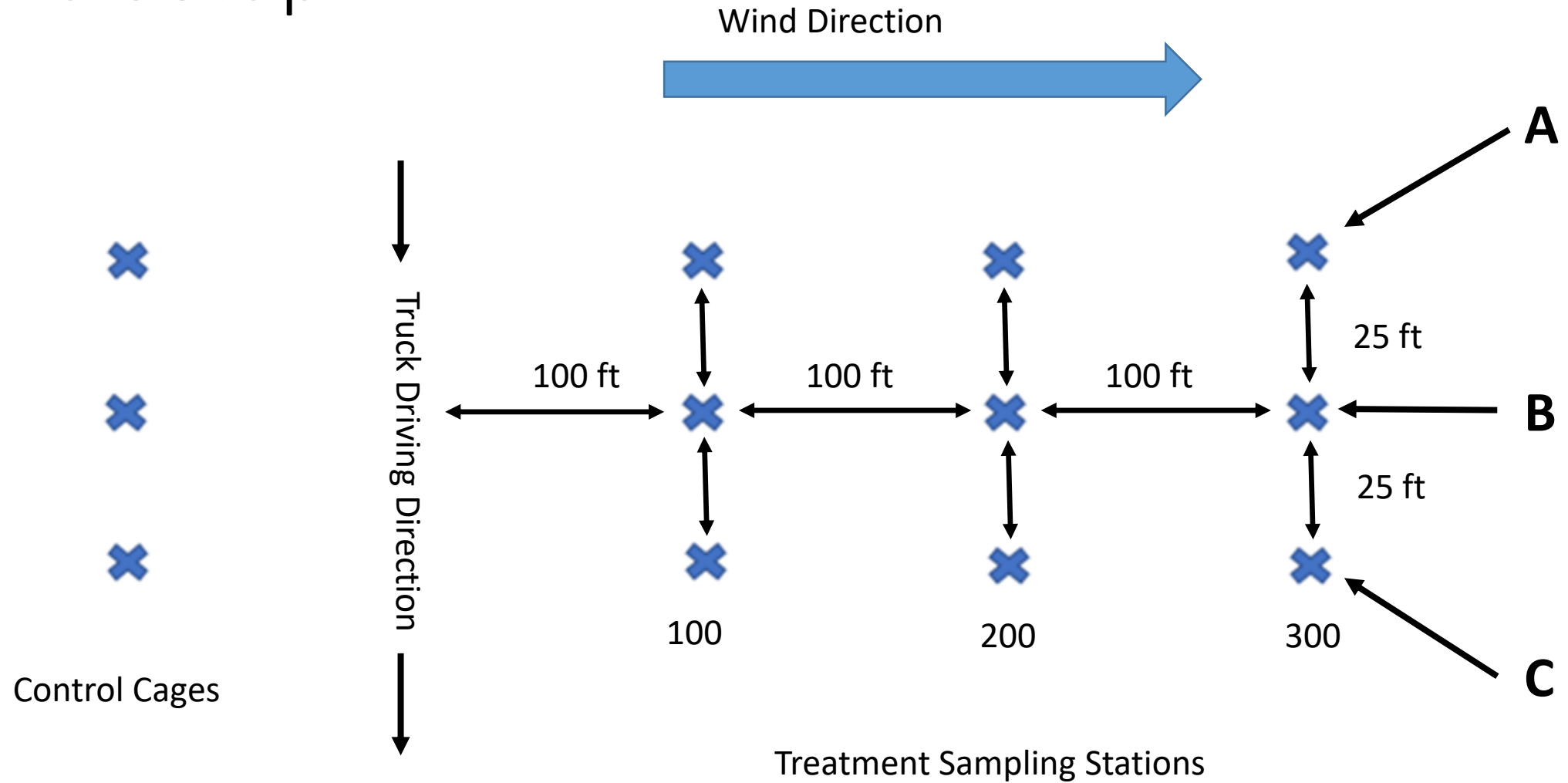


Setup

- 3x3 Grid
- 9 sentinel cage poles
 - 2 cages per pole
 - Chesapeake
 - Suffolk
- 9 spinner tripods
 - 2 slides per tripod
- 3 Control Cages



Grid Setup



Preparation

- 2-8 mph wind
- Temperature inversion
 - Weather station at 5' and 30'
- Dry truck runs
- Cages with mosquitoes
 - Checked cages for death
- Spinners turned on
 - 2 glass rods for spinners







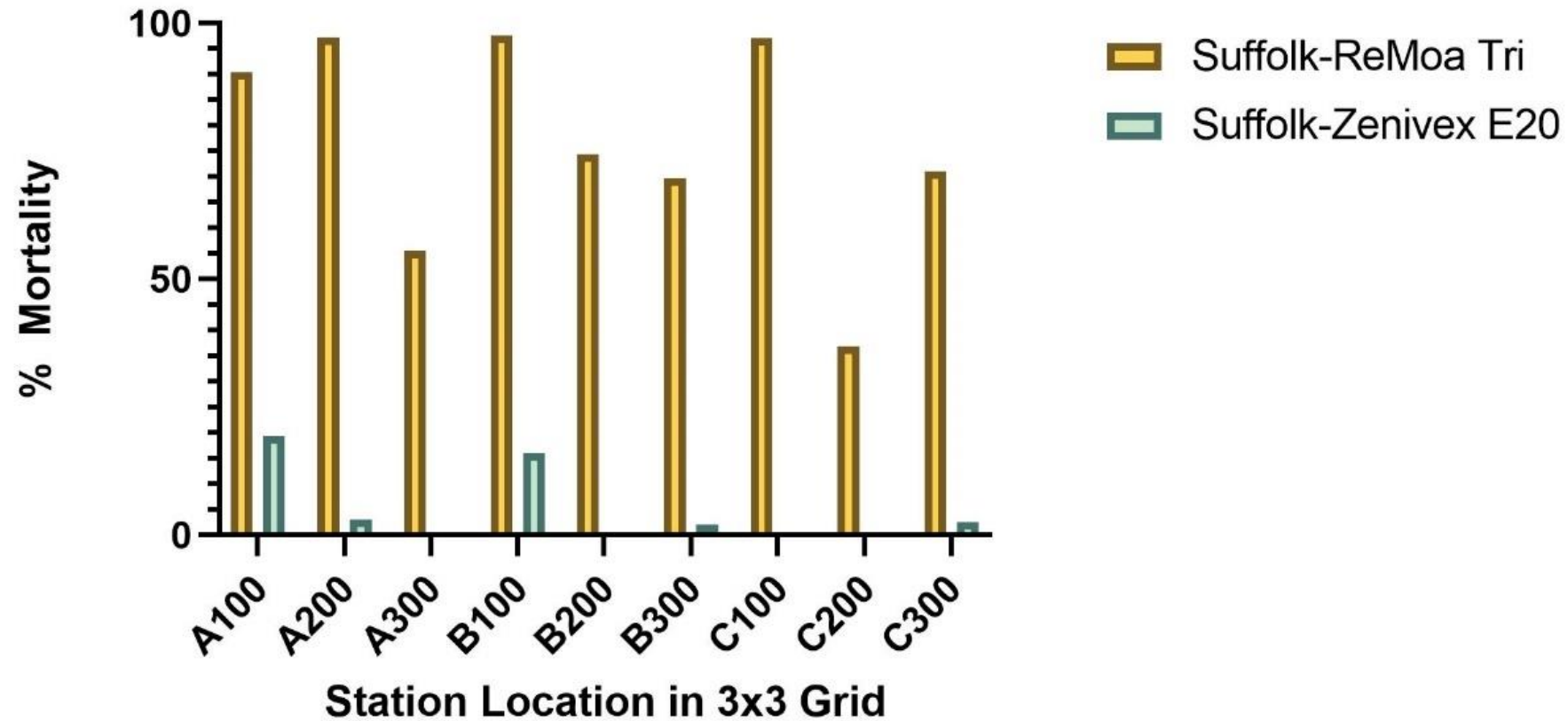


Results: Droplet Densities

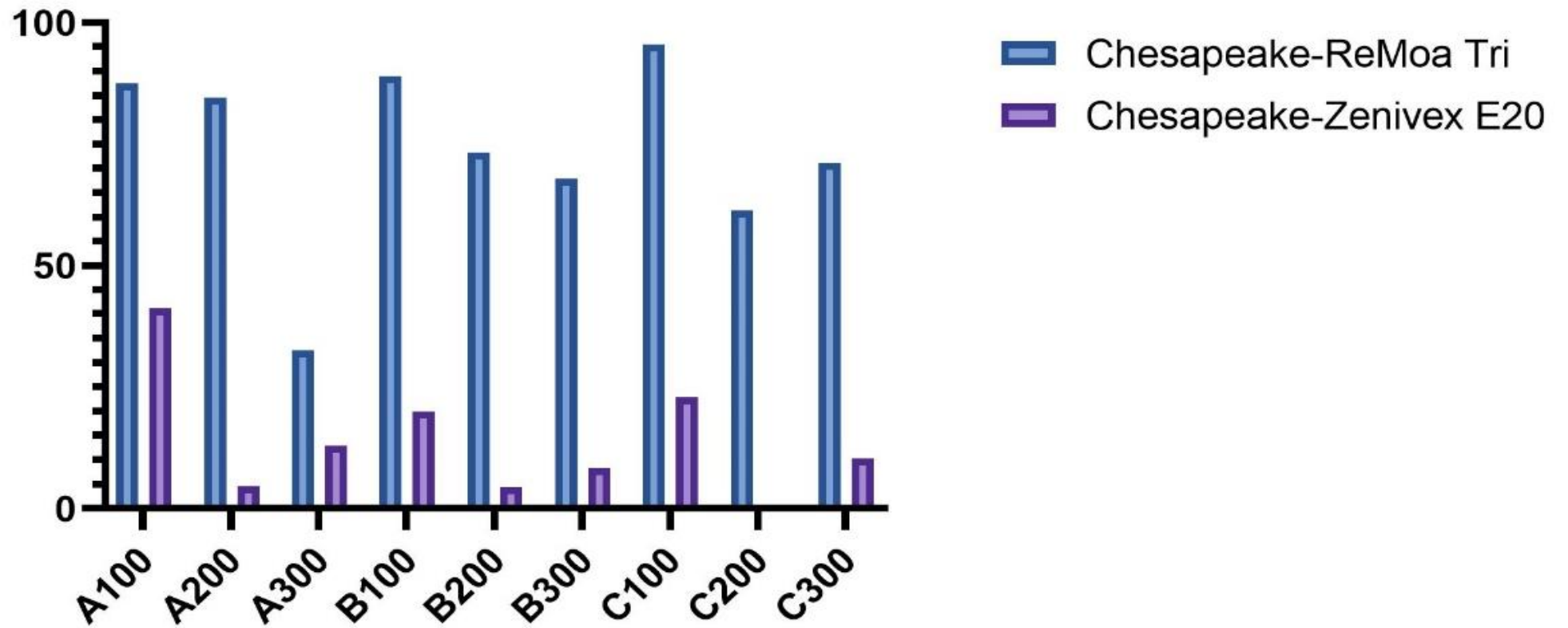
	Suffolk - Remoa Tri	Suffolk - Zenivex E20
Grid Location	Droplet Density (mm ²)	Droplet Density (mm ²)
A100	21.00	128.00
A200	6.00	84.00
A300	3.00	185.00
A Avg	10.00	132.33
B100	19.00	151.00
B200	6.00	66.00
B300	14.00	65.00
B Avg	13.00	94.00
C100	155.00	83.00
C200	12.00	82.00
C300	17.00	72.00
C Avg	61.33	79.00
Tot Avg	28.11	101.78
UTC A	0.00	0.00
UTC B	0.00	0.00
UTC C	0.00	0.00
UTC Avg	0.00	0.00

	Chesapeake - Remoa Tri	Chesapeake - Zenivex E20
Grid Location	Droplet Density (mm ²)	Droplet Density (mm ²)
A100	19.00	128.00
A200	6.00	84.00
A300	3.00	185.00
A Avg	9.33	132.33
B100	19.00	151.00
B200	6.00	66.00
B300	14.00	65.00
B Avg	13.00	94.00
C100	155.00	83.00
C200	12.00	82.00
C300	17.00	72.00
C Avg	61.33	79.00
Total Avg	27.89	101.78
UTC A	0.00	0.00
UTC B	0.00	0.00
UTC C	0.00	0.00
UTC Avg	0.00	0.00

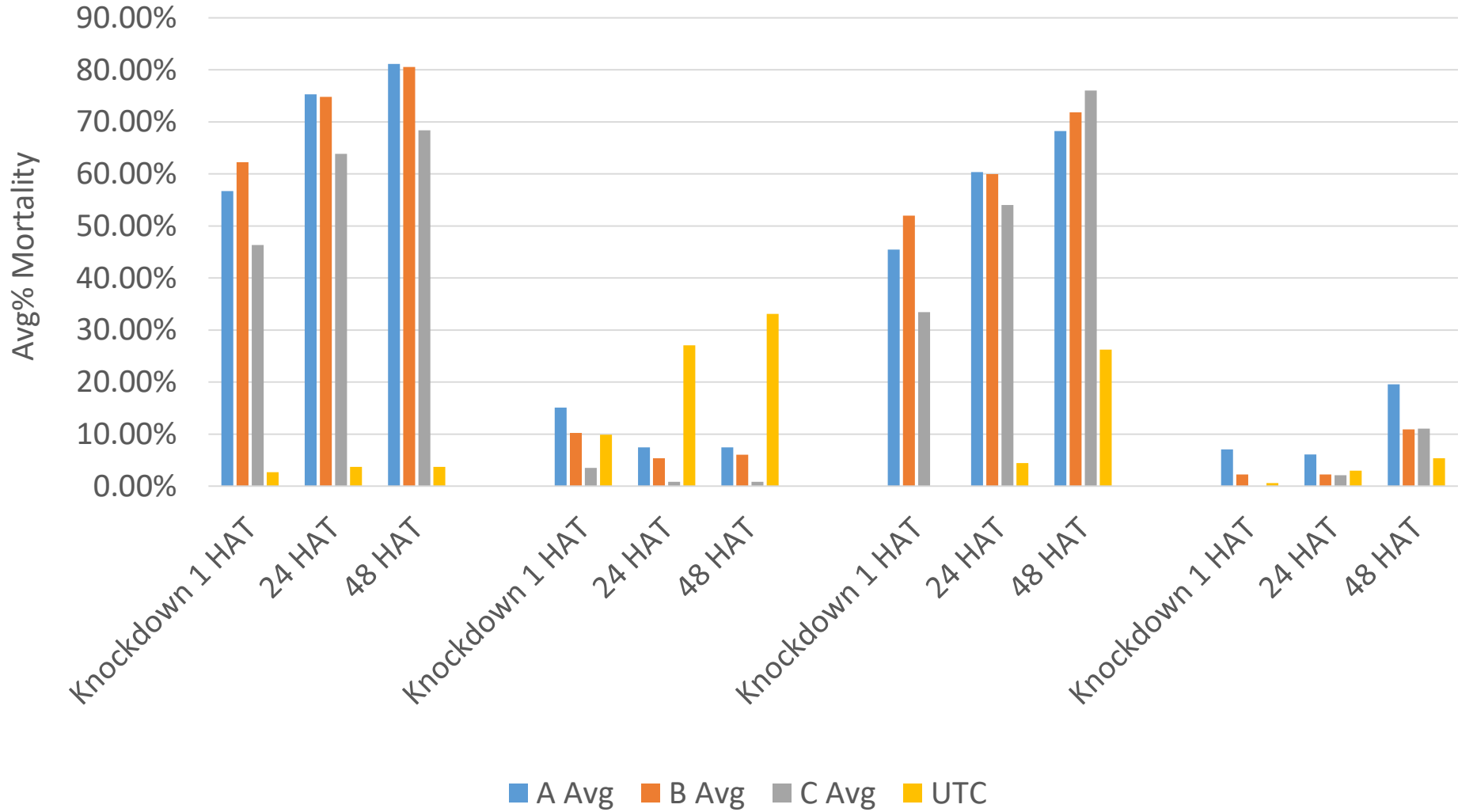
City of Suffolk 48hr % mortality from application of Remoa Tri and Zenivex E20



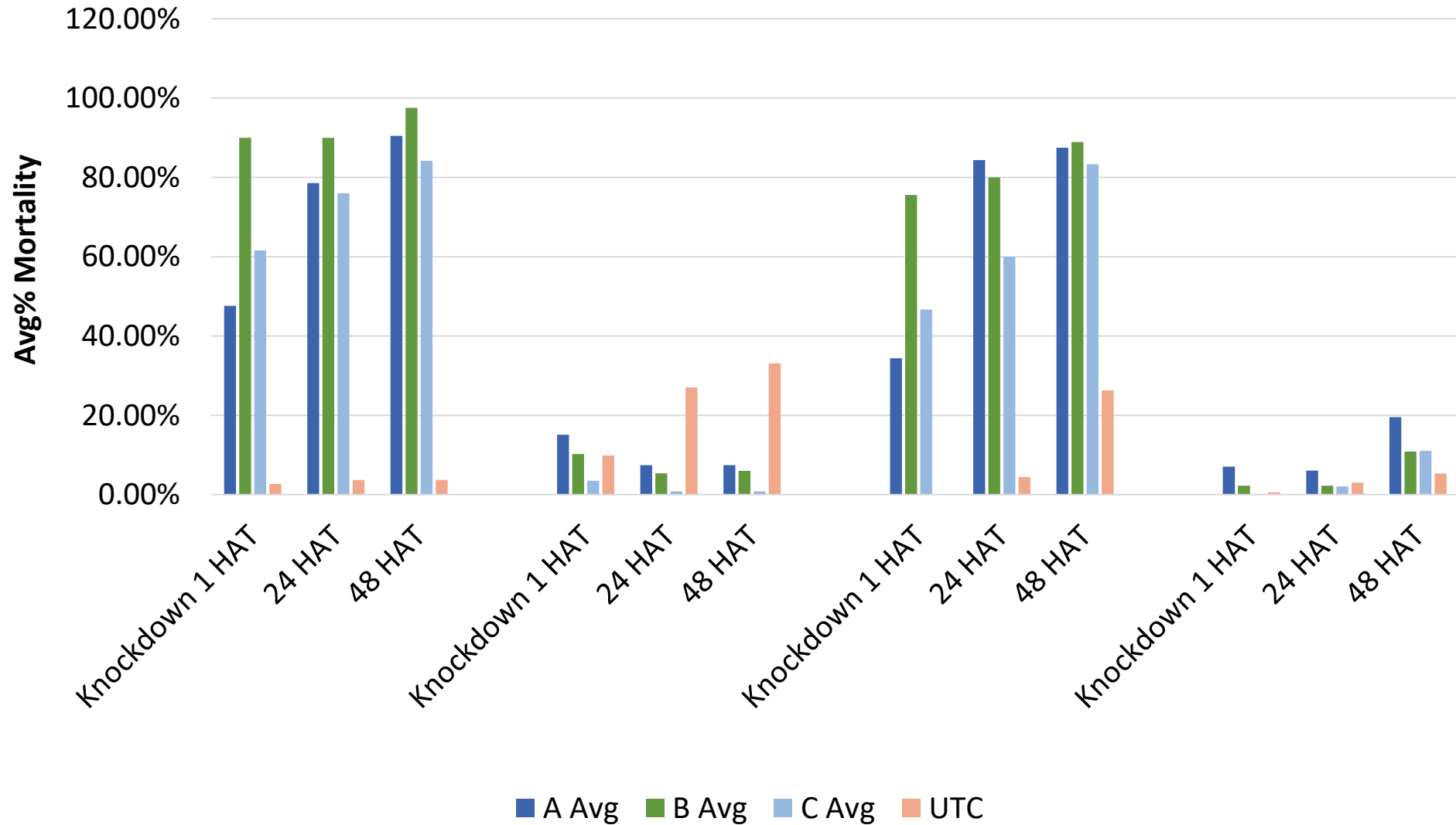
City of Chesapeake 48hr % mortality from application of Remoa Tri and Zenivex E20



Average % Mortality of Culex pipiens



Average % Mortality of Culex pipiens



Results Overall

ReMoa Tri	Suffolk 48 Hour Mortality %		
	100 ft	200 ft	300 ft
A	90.48	97.3	55.56
B	97.50	74.36	69.77
C	97.14	36.84	71.15

Zenivex	Suffolk 48 Hour Mortality %		
	100 ft	200 ft	300 ft
A	19.35	3.03	0
B	16.12	0	1.96
C	0	0	2.56

ReMoa Tri	Chesapeake 48 Hour Mortality %		
	100 ft	200 ft	300 ft
A	87.5	84.62	32.5
B	88.89	73.21	67.86
C	95.56	61.4	71.11

Zenivex	Chesapeake 48 Hour Mortality %		
	100 ft	200 ft	300 ft
A	41.18	4.55	12.9
B	20	4.35	8.33
C	22.86	0	10.34

Conclusions

- Rotating Remoa Tri into our program
 - Effective against resistant *Culex pipiens*
- Rotate with chlorpyrifos
 - Targeting different modes of action
- Future testing
 - CDC Bottle Bio Assays
 - More field cage trials

Acknowledgements

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Questions?