

# ReMoa Tri<sup>®</sup>

TRIPLE-ACTION INSECTICIDE

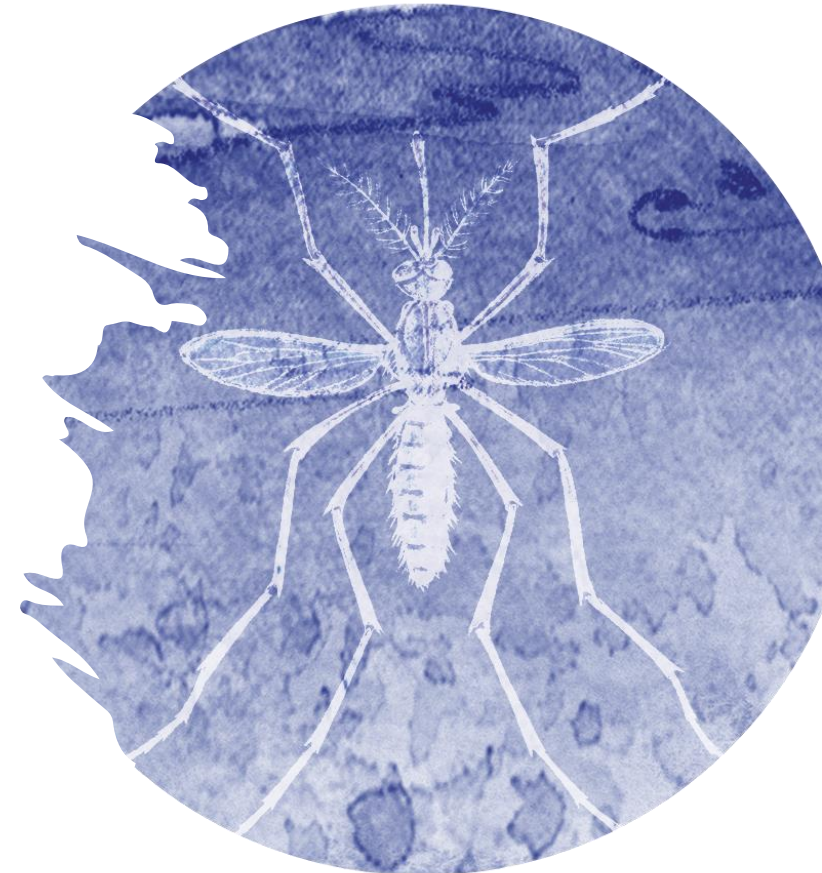
**SPACE SPRAY**

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10/17/24

**Mosquitoes  
are the  
deadliest animals  
in the world.**



**Malaria causes  
more than 400,000  
deaths every year.**





**More than 3.9 billion people in over 129 countries are at risk of contracting dengue, with an estimated 40,000 deaths every year.**

**Other viral diseases transmitted by mosquitoes include chikungunya fever, Zika virus fever, yellow fever, West Nile fever, St. Louis encephalitis and Japanese encephalitis.**





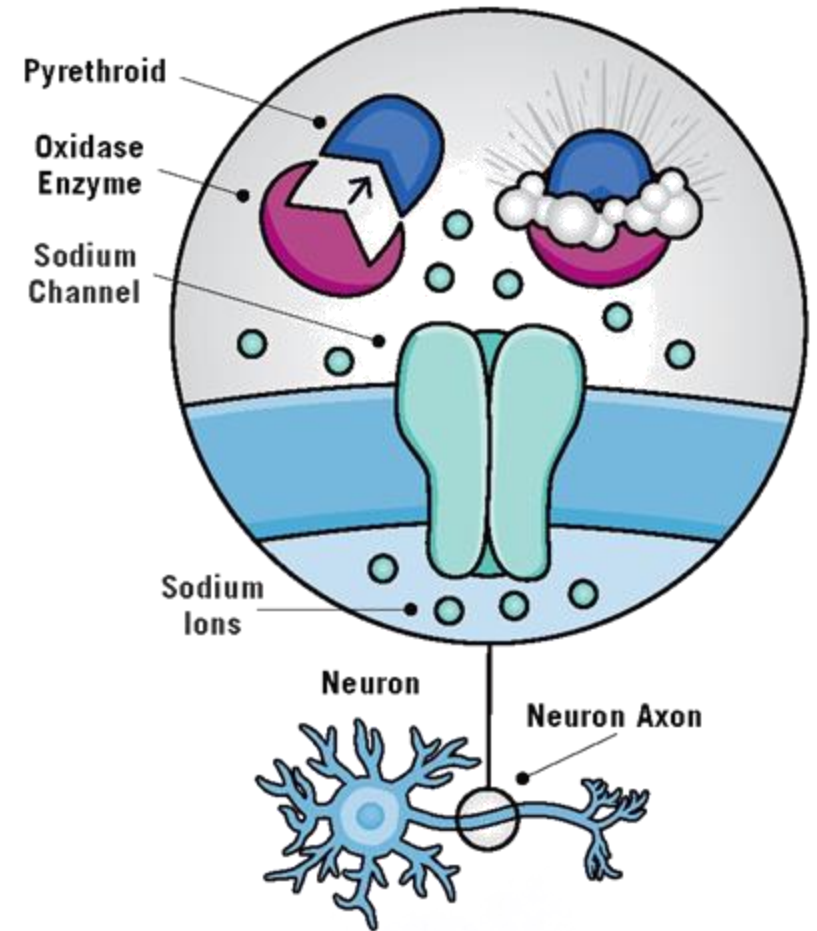
# Understanding Resistance



More than **500 species**  
worldwide  
have some level of  
resistance

# Metabolic Pyrethroid Resistance

In metabolic resistance, the cytochrome P-450 system of mosquitoes produces **oxidase** and **esterase** enzymes that bind with **pesticide molecules** and breaks them down.

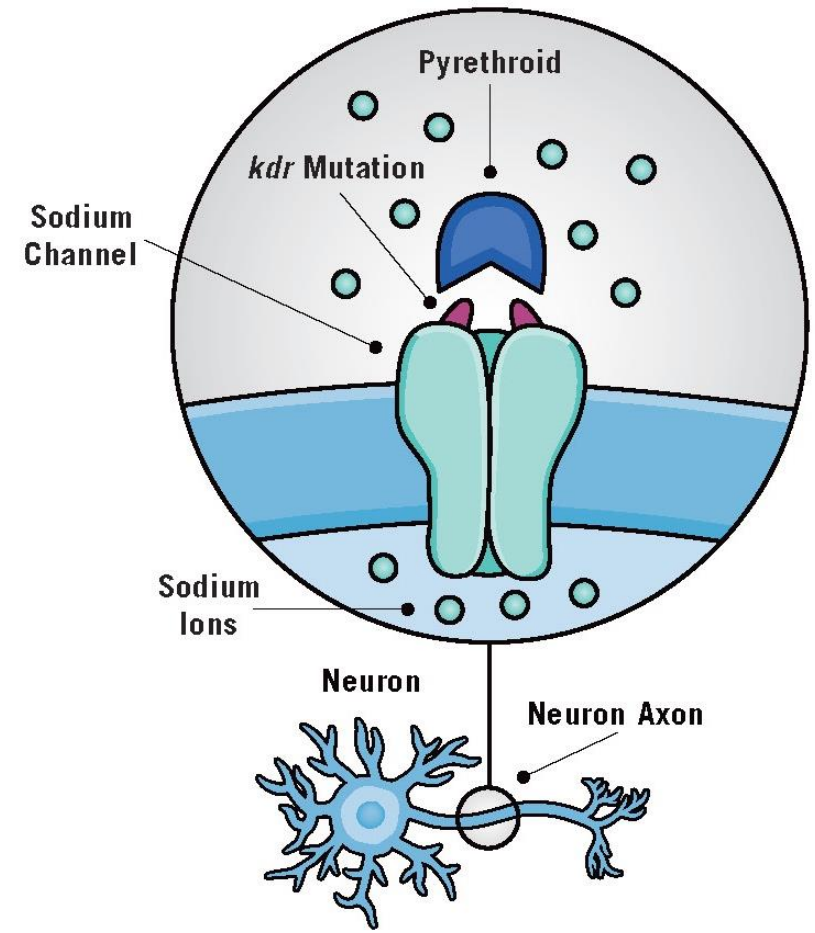




# Knockdown Mutation Resistance (*kdr*)

**Pyrethroids** bind to the **sodium channel ions** and prevent them from normally working thus causing death.

In *kdr*, the **target sites** where **pyrethroid molecules** bind are **modified**, and thus prevent the binding of **pyrethroid molecules**.





# Novel Adulticide to Combat Insecticide Resistance



**ReMoa Tri, is the world's first adulticide space spray to control resistant mosquitoes based on the fermentation of a soil bacterium**

# Features & Benefits

## FEATURES

**World's first mosquito adulticide space spray based on a soil bacterium**

**Contains soil bacterium metabolite that has historically been used in pharmaceuticals (discoverers awarded Nobel Prize)**

**Combination of three active ingredients (abamectin, fenpropathrin, C8910) novel to mosquito control with three different modes of action**

**Ready-to-use formulation**

## BENEFITS

Resistance management

Sustainability

Reduced risk

Broad spectrum efficacy to manage both metabolic and *kdr* resistance

No PBO required

Operational speed

## FEATURES

**High efficacy of an organophosphate with the safety profile of a pyrethroid**

**Only space spray in market that lists resistant mosquito control on the label**

**Multiple application platforms and uses\***

**Non-corrosive formulation**

**Oil-based space spray**

## BENEFITS

Saves time on training staff to manage multiple active ingredient types (e.g. PPE, pre-cautions, etc.)

Peace of mind

Operational flexibility

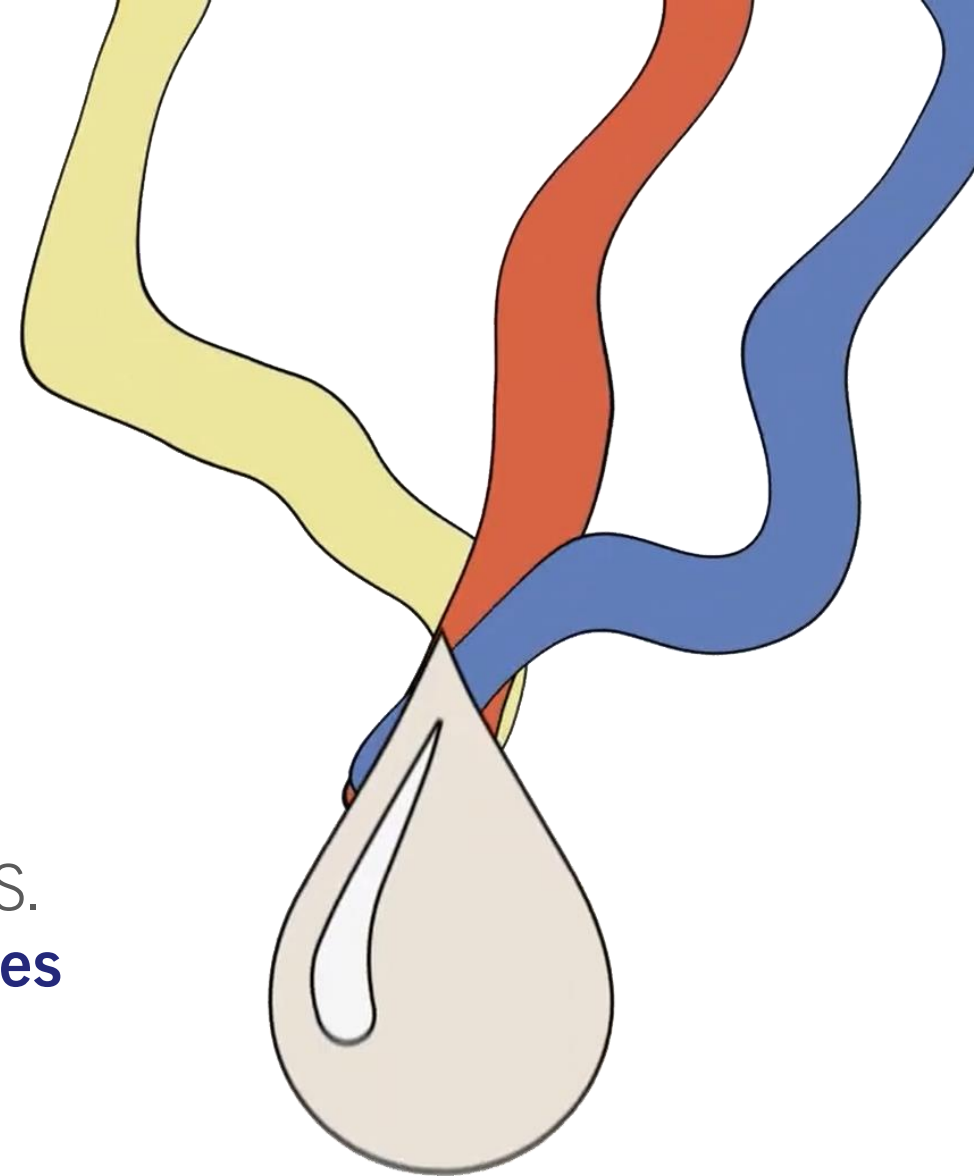
No need to replace expensive valves and fixtures in equipment

Works well with existing ULV equipment in the field

\*For aerial and crop use, U.S. Environmental Protection Agency is still reviewing these applications

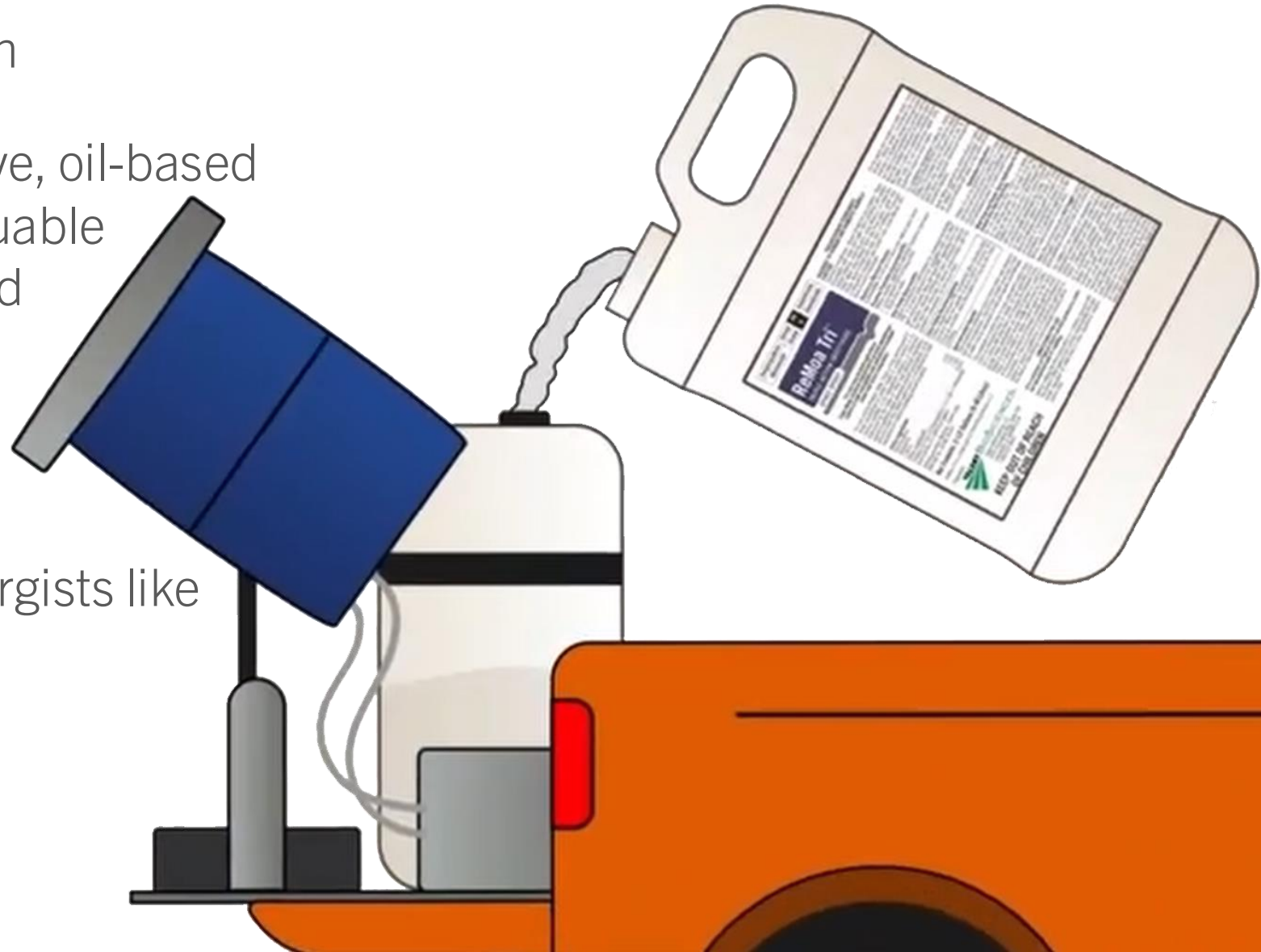
# Efficacy

- ▶ High efficacy expected of an organophosphate paired with the safety profile of a pyrethroid.
- ▶ **Three distinct modes of action** for effective control against both metabolic and knockdown (kdr) resistance in mosquitoes.
- ▶ Only mosquito space spray approved by the U.S. EPA. to list control of **permethrin resistant Aedes and Culex mosquitoes** on its label.



# Operational Flexibility

- ▶ Ready to Use formulation
- ▶ ReMoa Tri's non-corrosive, oil-based formulation protects valuable application hardware and works with existing ULV equipment.
- ▶ Multiple modes of action eliminates need for synergists like PBO





# Modes of Action

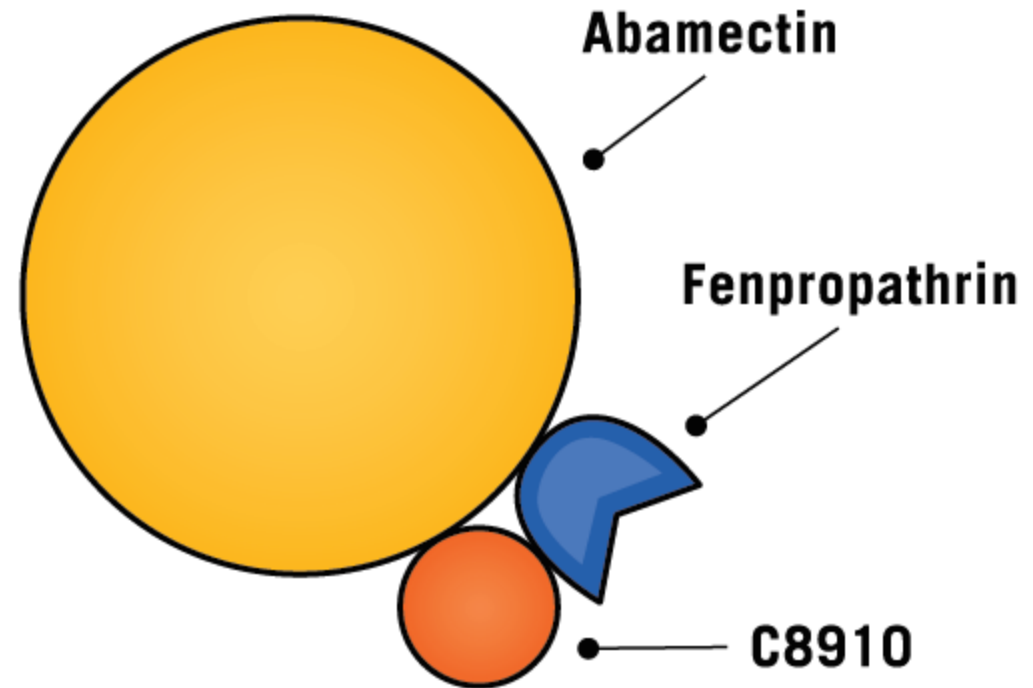
# ReMoa Tri contains a unique matrix of the following active ingredients:

Abamectin

Fenpropathrin

C8910

(mixture of three fatty acids: C8, C9, C10)

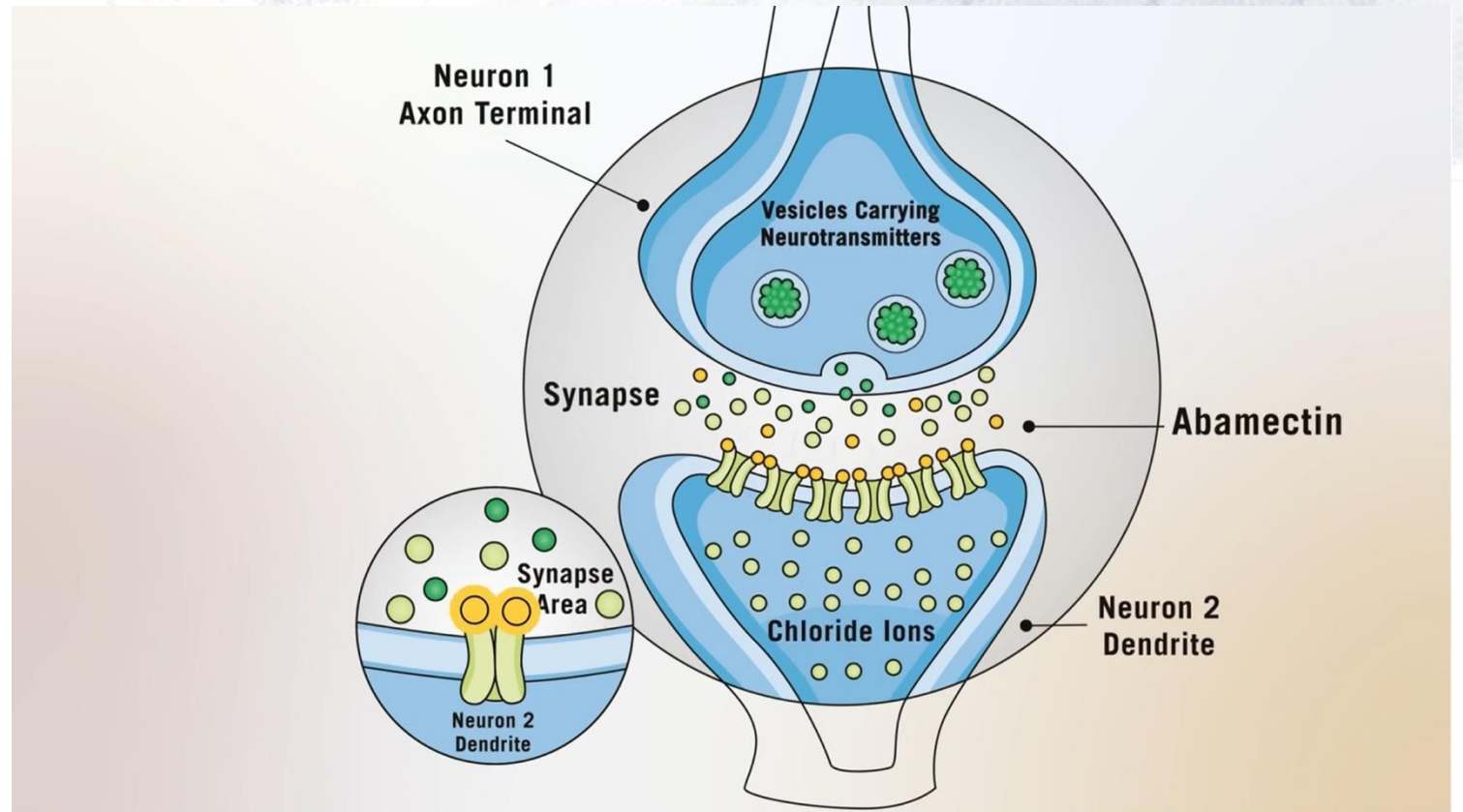
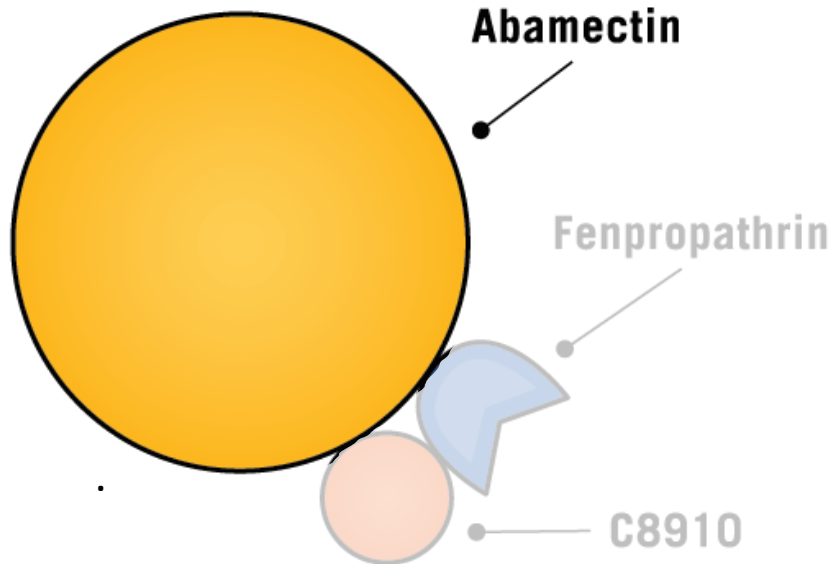




# Abamectin

Product of natural occurring fermentation of the bacterium *Streptomyces avermitilis*.

Belongs to the group of compounds referred to as macrocyclic lactones.

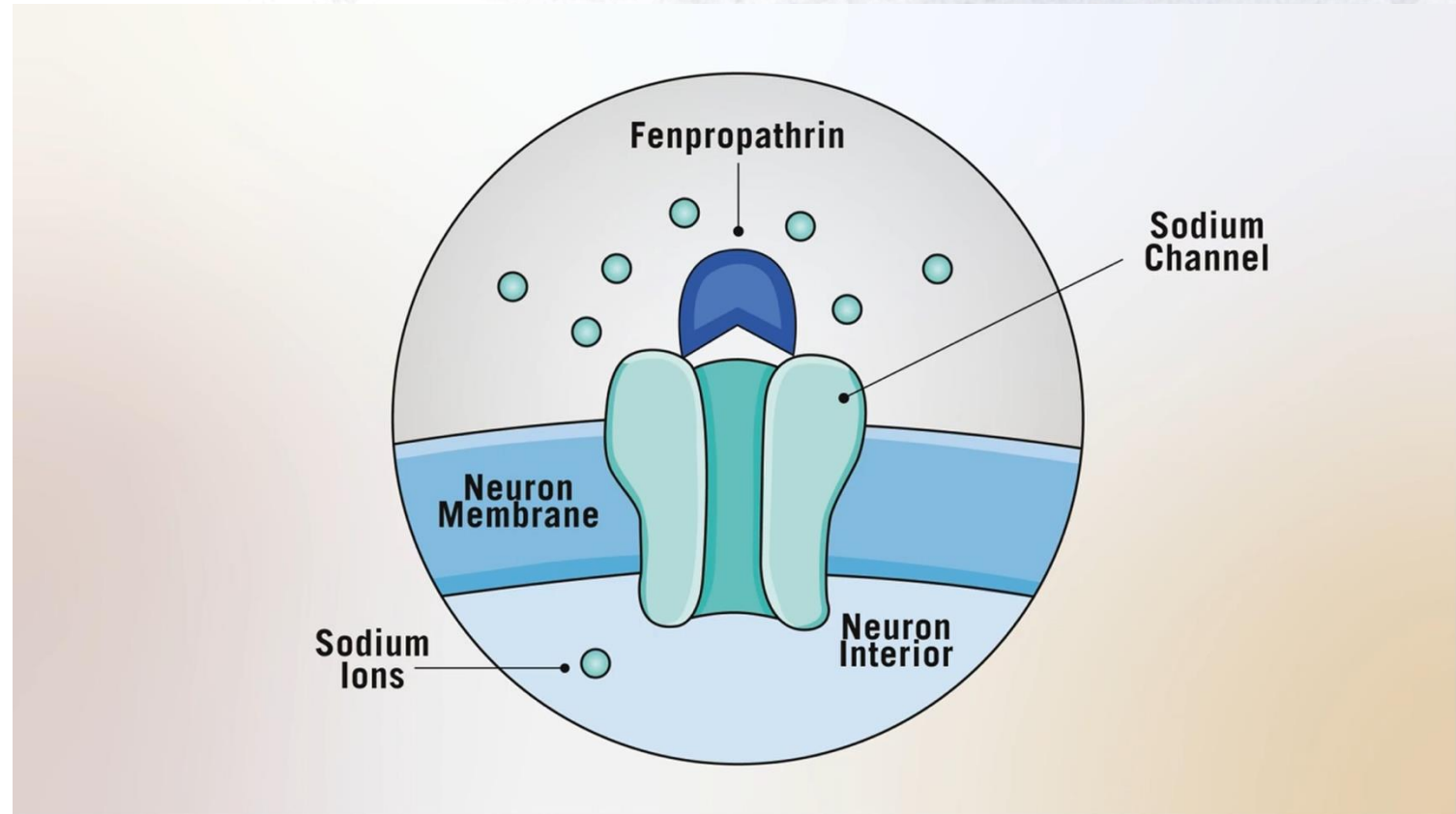
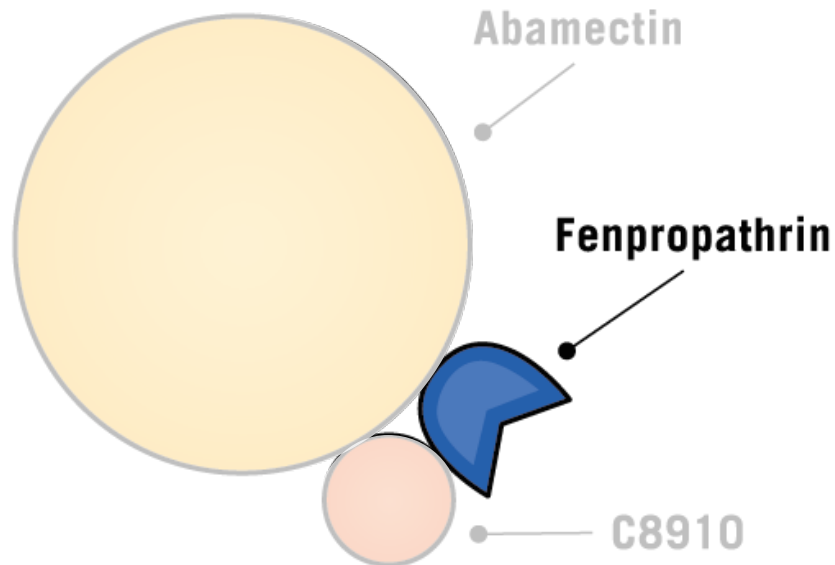


Binds to the glutamate-gated chloride channels (GluCl<sub>s</sub>) causing irreversible conductance, hyperpolarization, and paralysis

# Fenpropathrin

Belongs to the Type 2 group of pyrethroids.

Type 2 pyrethroids have shown to be more efficient in interfering with voltage gated sodium channels.

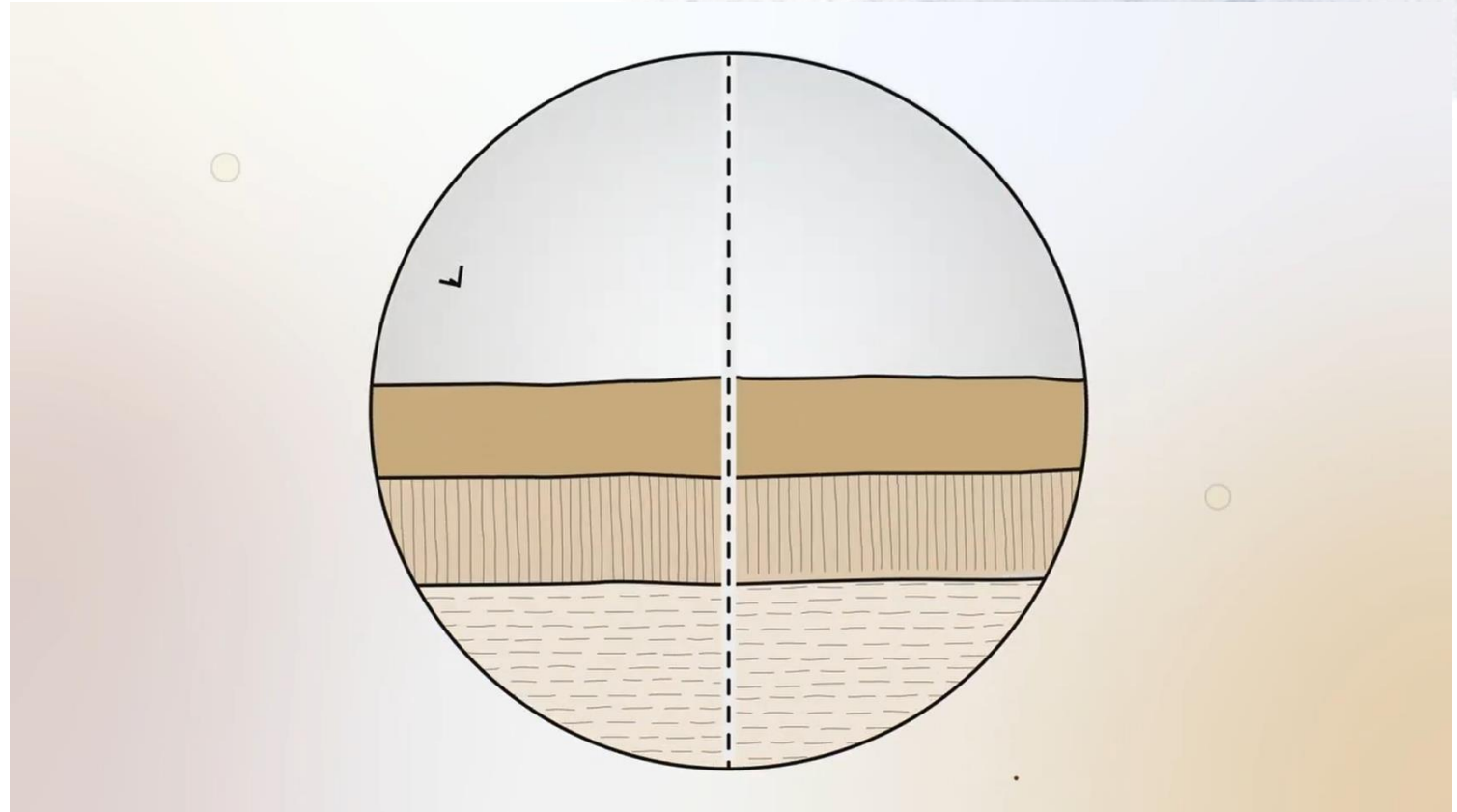
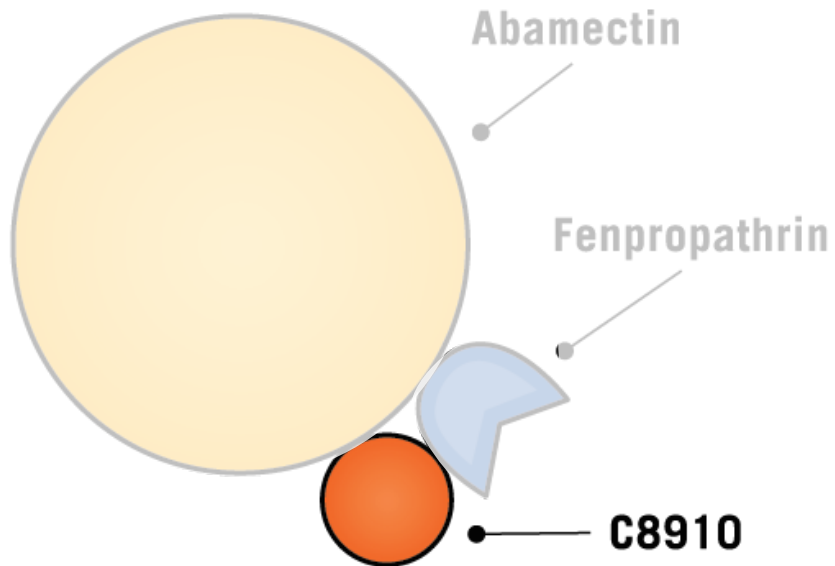


Affects the voltage-gated sodium channels by binding to specific receptors and creating persistently open channels which results in muscular paralysis and death.

# C8910

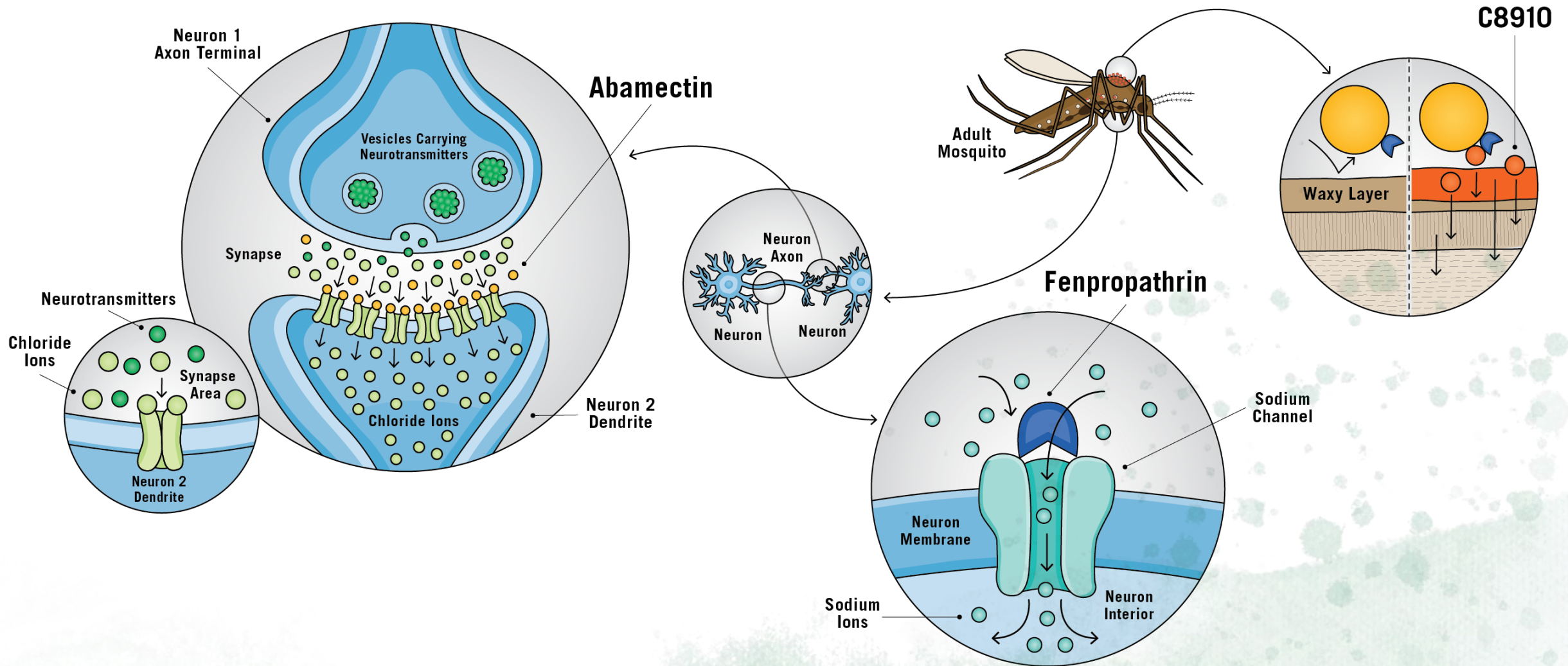
The product C8, C9, C10 (C8910) is a mixture of three free fatty acids - extracted from palm kernel oil, coconut oil, or cattle tallow.

When combined with pyrethroids, C8910 enhances efficacy by delivering a synergistic effect.



Thought to have similar effects to organic insecticidal soaps by which they either asphyxiate the respiratory system and/or break down the cuticle protection of pest insects.

# Complete Mode of Action



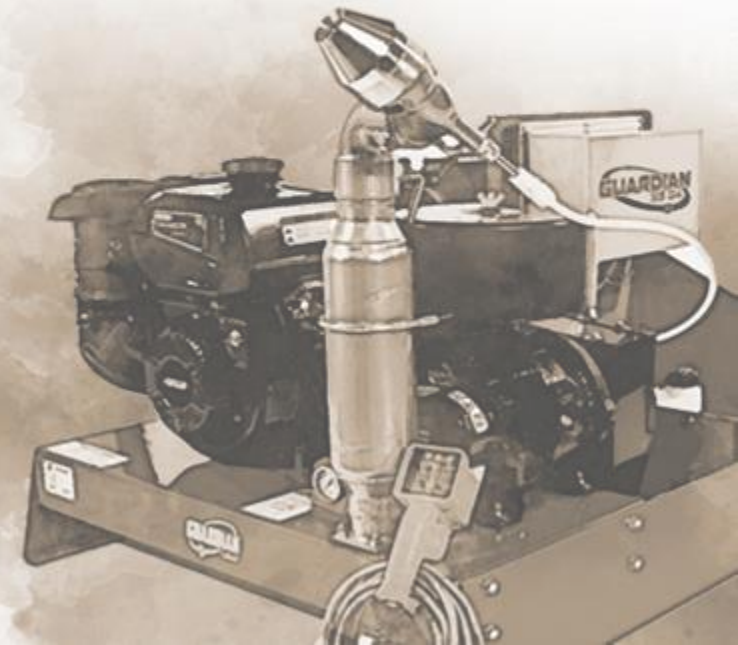


# Application Approach



**ReMoA Tri can be applied as an Ultra-Low Volume (ULV), or non-thermal aerosol spray (cold fog).**

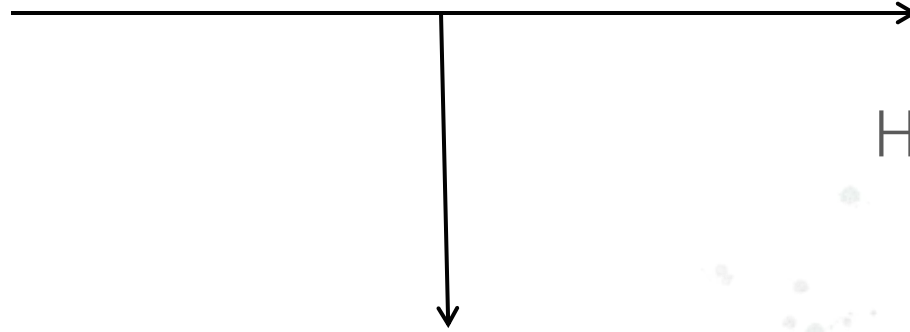
**This can include handheld and vehicle mounted equipment.**



# Application Rate

**0.341**oz/acre

Nonresistant or  
susceptible



**1.02**oz/acre

Highly resistant mosquitoes  
(very rarely needed)

**0.66**oz/acre

Resistant mosquitoes  
(metabolic *Culex*  
and *kdr Aedes*)

# Application Timing

**FOR BEST RESULTS,** treat when mosquitoes or insects are most active and weather conditions are conducive to keeping the spray cloud in the air column close to the ground.



Inversion of  
air temps &  
light breeze



Night or early  
morning



Above 50° F



# Flow Rate



2.02 to 6.08 fluid  
ounces per minute



Average vehicle speed  
of 10mph

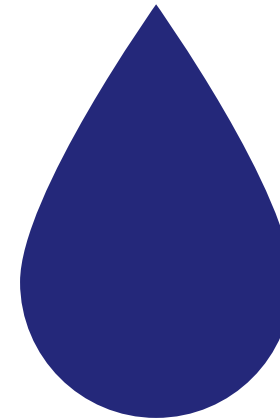
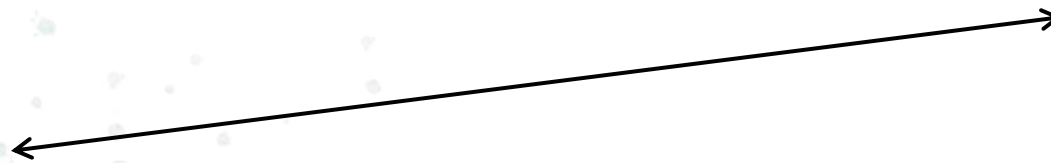


300 feet swath width for  
acreage calculations

When targeting **pyrethroid-resistant mosquitoes** use a flow rate of **4.03 fluid ounces per minute** at an average vehicle speed of 10 mph. If a different vehicle speed is used, adjust the rate accordingly.

# Droplet Size

Spray equipment must be adjusted so that the volume median diameter (VMD) is between **8-30 microns** ( $8\mu \leq Dv_{0.5} \leq 30\mu$ ) and that 90% of the spray volume is contained in droplets **smaller than 50 microns** ( $Dv_{0.9} < 50\mu$ ).



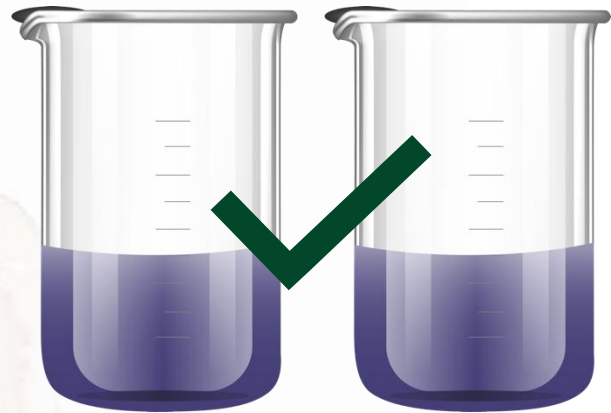
$$8\mu \leq Dv_{0.5} \leq 30\mu$$

# ReMoa Diluent

ReMoa Tri is a **"Ready to Use" product** and does not require dilution.

When applications do require dilution, **only dilute with manufacturer-provided ReMoa™ Diluent** and **DO NOT** dilute with water or any other diluent.

ReMoa Tri should not be diluted more than a 1:1 ratio.



Two (2) Parts ReMoa Tri

One (1) Part ReMoa Diluent

# ReMoa Tri Label

Fenpropathrin	Group 3A	Insecticide
Abamectin	Group 6	Insecticide

## ReMoa Tri™ TRIPLE-ACTION INSECTICIDE SPACE SPRAY

For non-crop ground applications. Triple Mode of Action Insecticide to provide operational control of both susceptible and permethrin-resistant *Aedes* and *Culex* mosquitoes.

For use only by Federal, State, Tribal, or local government officials responsible for public health or vector control, or by persons certified in the appropriate category, or otherwise authorized by the State or Tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision, or as allowed by State regulations for persons treating private property.

**Active Ingredients:**  
Fenpropathrin ..... 4.0%  
Abamectin ..... 1.5%  
C-8910 ..... 1.0%  
Other Ingredients ..... 93.5%  
Contains 0.3 lbs of Fenpropathrin, 0.11 lbs of Abamectin and 0.08 lbs of C-8910 per gallon.

EPA Registration Number: 73049-526  
EPA Est. No. 33762-1A-001

### Net Contents:

ReMoa Tri is a trademark of Valent BioSciences LLC

Registrant:



## KEEP OUT OF REACH OF CHILDREN CAUTION

FIRST AID	
<b>If swallowed</b>	<ul style="list-style-type: none"> <li>Call a poison control center or doctor for treatment advice.</li> <li>Have person sip a glass of water if able to swallow.</li> <li>Do not induce vomiting unless told to do so by a poison control center or doctor.</li> <li>Do not give anything to an unconscious person.</li> </ul>
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.</li> <li>Call a poison control center or doctor for immediate treatment advice.</li> </ul>
HOT LINE NUMBER	
Have the product container label with you when calling a poison control center or doctor or going for treatment. For emergency medical treatment and or transportation emergency information contact 1-877-315-9819 or contact the National Pesticides Information Center (NPIC) at 1-800-858-7378, Monday through Friday, 8 AM to 12 PM PST, or at <a href="http://npic.orst.edu">http://npic.orst.edu</a> . For general information about this product, call 1-800-323-9597.	

Lot

No.:

List No. A560205-04-

99-1803/R1

### PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

#### CAUTION

Harmful if swallowed. Causes moderate eye irritation. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Wear long-sleeved shirt and long pants, socks and shoes. Avoid contact with eyes, skin, or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

**Physical or Chemical Hazards**  
Combustible. Do not use or store near heat or open flame.

**Personal Protective Equipment (PPE)**  
Mixers, loaders, applicators and other handlers must wear:  
• Long-sleeved shirt and long pants.  
• Shoes plus socks.

#### User Safety Requirements

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

**User Safety Recommendations**  
Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

#### Environmental Hazards

This product is extremely toxic to fresh water and estuarine fish and invertebrates. Runoff from treated areas into a body of water may be hazardous to fish and aquatic invertebrates.

This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow drift when bees are foraging the treatment area, except when applications are made to prevent or control a threat to public and/or animal health determined by a State, Tribal or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes, or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the State or Tribe during a natural disaster recovery effort.

#### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Before making the first application in a season, consult with the State or Tribal agency with primary responsibility for pesticide regulation to determine if other regulatory requirements exist.

Do not apply over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes, or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. Do not contaminate water when disposing of equipment rinseate or wash waters.

For resistance management, ReMoa Tri, TRIPLE ACTION INSECTICIDE SPACE SPRAY (from here on simply indicated as ReMoa Tri) contains Group 3A and 6 insecticides. Any Insect population may develop resistance to any AI if repeatedly used. Hence appropriate resistance-management strategies should be followed.

Note: When applications require dilution, ReMoa Tri can only be diluted with manufacturer-provided diluent. ReMoa Tri cannot be diluted with water or any other diluent.

#### Application Instructions

ReMoa Tri can be applied as an Ultra-Low Volume (ULV), or non-thermal aerosol spray (cold fog) in mosquito adulticide programs involving outdoor residential, urban, industrial, and recreational areas, to control adult mosquitoes.

#### Wide Area and Space Spray Application for Mosquito Control Over Non-Crop Areas

Do not apply more than 1.018 fl oz of ReMoa Tri per acre in any two-day period. Do not make more than 30 applications per site per year (For a maximum rate 30.54 fl oz of ReMoa Tri per acre per year). More frequent applications per site may be made to prevent or control a threat to public and/or animal health determined by a State, Tribal or local health or vector control agency on the basis of documented evidence of disease-causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the State or Tribe during a natural disaster recovery effort.

Apply the product through a ULV Fogger (also known as ULV cold fogger), which is a piece of equipment designed to disperse pesticide chemicals in the air as a mist or fog.

Use ReMoa Tri for control of mosquitoes in areas such as residential areas, industrial areas, urban areas (utility tunnels, sewers, storm drains and catch basins, pipe chases, basements, underground passages, parking decks, crawl spaces, or uninhabited buildings), parks, campsites, woodlands, athletic fields, golf courses, playgrounds, recreational and overgrown waste areas, roadsides, swamps, marshes, tidal areas, corrals, feed lots, swine lots, poultry ranges, zoos, animal quarters, barns, dumps, junkyards, fire dumps, and other areas where adult mosquitoes may be found. For best results, apply when insects are most active and meteorological conditions are conducive to keeping the spray cloud in the air column close to the ground. An inversion of air temperatures and a light breeze is preferable. Apply during the cooler

hours of the night or early morning. Apply when wind speed is equal to or greater than 1 mph.

#### Droplet Size Determination for Ground Application Equipment

Spray equipment must be adjusted so that the volume median diameter (VMD) is between 8-30 microns ( $\mu = D_{v0.5} \leq 30\mu$ ) and that 90% of the spray volume is contained in droplets smaller than 50 microns ( $D_{v0.9} < 50\mu$ ). A laser-based measurement instrument, or a 'hot wire' based droplet analyzer such as KLD labs DC-IV system, must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

#### Ground ULV Application

Create an optimum swath when possible. An optimum swath width can be achieved when ReMoa Tri is applied from a truck that is being driven perpendicular to the wind direction. Direct the spray head of equipment to ensure even distribution of the spray cloud throughout the area.

• FOR BEST RESULTS treat when mosquitoes or insects are most active and weather conditions are conducive to keeping the spray cloud in the air column close to the ground.  
• An inversion of air temperatures and a light breeze is preferable. Application during the cooler hours of the night or early morning is recommended.

To control mosquitoes and other listed insects, apply ReMoa Tri at a flow rate of 2.02 to 6.08 fluid ounces per minute at an average vehicle speed of 10 mph using a swath width of 300 feet for acreage calculations (see chart below). For best results, apply when mosquitoes are most active and meteorological conditions are conducive to keeping the spray cloud close to the ground. Do not apply in calm air conditions. Apply only when ground wind speed is greater than or equal to 1 mph. Conduct all types of applications at temperatures above 50°F. When targeting permethrin-resistant *Aedes* and *Culex* mosquitoes use a flow rate of 4.03 fluid ounces per minute at an average vehicle speed of 10 mph. If a different vehicle speed is used, adjust rate accordingly. These rates are equivalent to 0.00080/0.00030/0.00020 to 0.00239/0.00089/0.00060 pounds of Fenpropathrin/Abamectin/C8910 respectively per air column acre. Vary flow rate according to vegetation density and mosquito population. Use higher flow rate in heavy vegetation or when populations are high. ReMoa Tri may also be diluted with the manufacturer's provided diluent (water or mineral oil should not be used as a diluent for ReMoa Tri) and applied by ground ULV equipment. Do not exceed 0.00239/0.00089/0.00060 pounds of Fenpropathrin/Abamectin/C8910 respectively per air column acre. Refer to the dilution tables on this label for flow rate calculations for diluted end-use formulations of ReMoa Tri. Use the following tables to calculate application rates:

Flow Rate Based on a 300-Foot Swath Width (Fluid Ounces Per Minute)

Application Rates (Pounds of Fenpropathrin AI per Air Column Acre)	Application Rates (Pounds of Abamectin AI per Air Column Acre)	Application Rates (Pounds of C-8910 AI per Air Column Acre)	ReMoa Tri (fl oz Per Air Column Acre)	Vehicle Speed (MPH)	Undiluted	Diluted 1:0.5	Diluted 1:1	Diluted 1:2
0.0008	0.0003	0.0002	0.341 (Low)	5	1.03	1.55	2.07	3.10
				10	2.07	3.10	4.13	6.20
				15	3.10	4.65	6.20	9.29
				20	4.13	6.20	8.26	12.39
0.00157	0.00059	0.00039	0.669 (Mid)	5	2.03	3.04	4.05	6.08
				10	4.05	6.08	8.11	12.16
				15	6.08	9.12	12.16	18.24
				20	8.11	12.16	16.21	24.32
0.00239	0.00089	0.0006	1.018 (High)	5	3.09	4.63	6.17	9.26
				10	6.17	9.26	12.34	18.51
				15	9.26	13.88	18.51	27.77
				20	12.34	18.51	24.68	37.02

When targeting permethrin-resistant *Aedes* and *Culex* mosquitoes, or other difficult to control species of mosquitoes, use the mid to high label rate. ReMoa Tri can not exceed the maximum rates of active ingredient per air column acre listed above.

### STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

**Pesticide Storage:** Store in a cool, dry place.  
**Pesticide Disposal:** Wastes resulting from the use of this product may be disposed of onsite or at an approved waste disposal facility. **Container Disposal:** Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with mineral oil and recap. Shake for 10 seconds. Pour rinseate into application equipment or a rinse tank or store rinseate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling if available or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

#### NOTICE TO USER

Warranty and Disclaimer Statement:  
To the extent consistent with applicable law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. To the extent consistent with applicable law, user assumes all risks of use, storage or handling not in strict accordance with accompanying directions.

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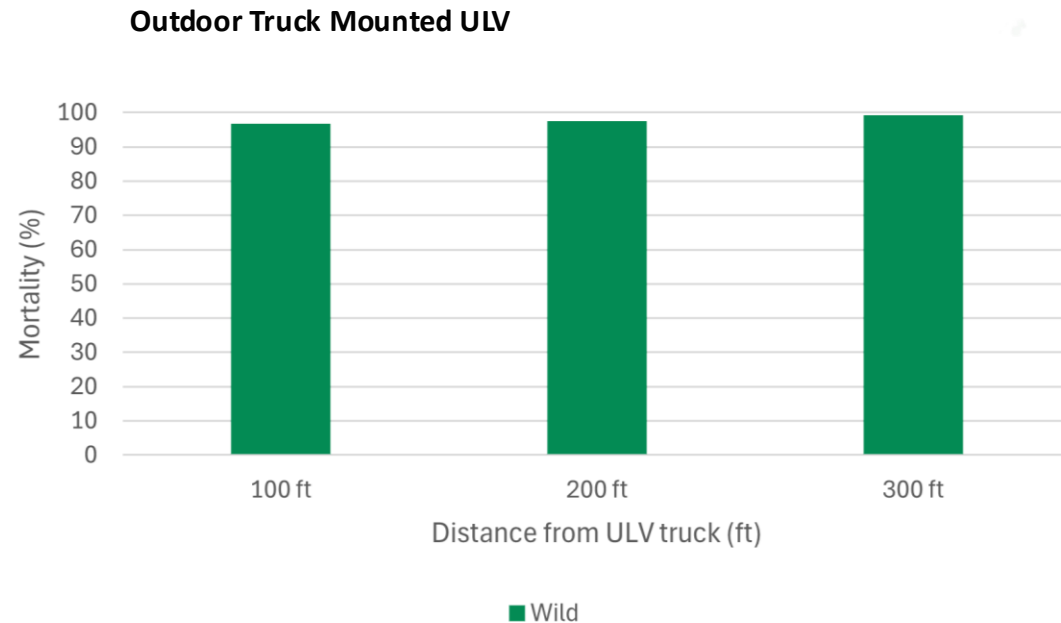


# Technical Data

# Arizona Technical Data

Arizona Wild Mix of *Culex* spp. (*Cx. quinquefasciatus* and *Cx. tarsalis*)

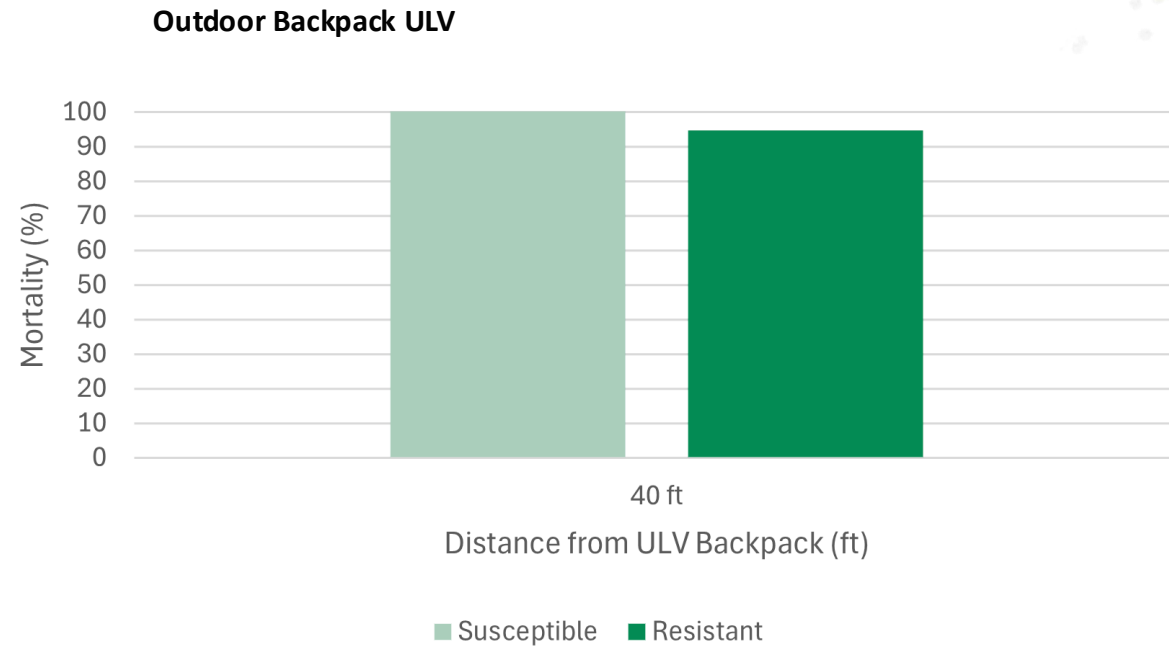
Data courtesy of Maricopa County Environmental Services



# California Technical Data

## California *Culex quinquefasciatus* resistant strain

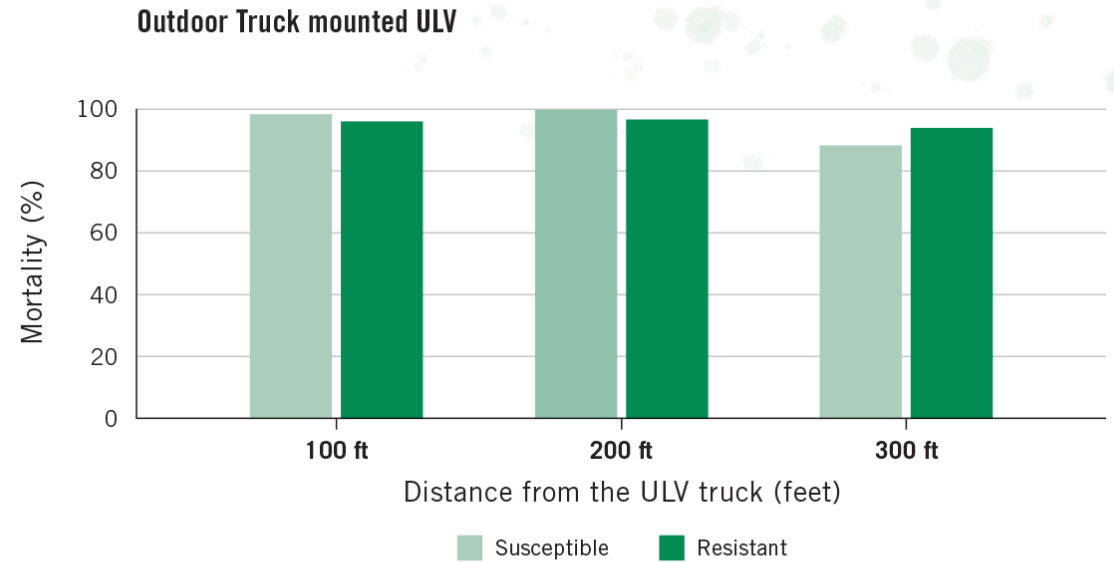
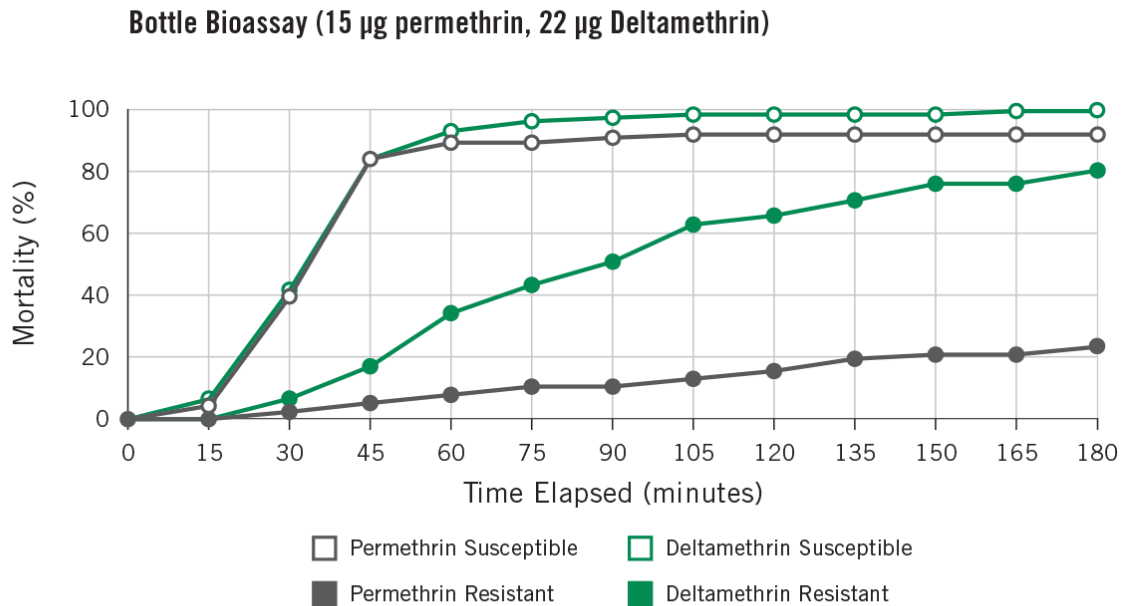
Data courtesy of Coachella Valley



# California Technical Data

California *Culex pipiens* resistant strain and *Culex quinquefasciatus* susceptible strain

Data courtesy of Sacramento-Yolo Mosquito and Vector Control District

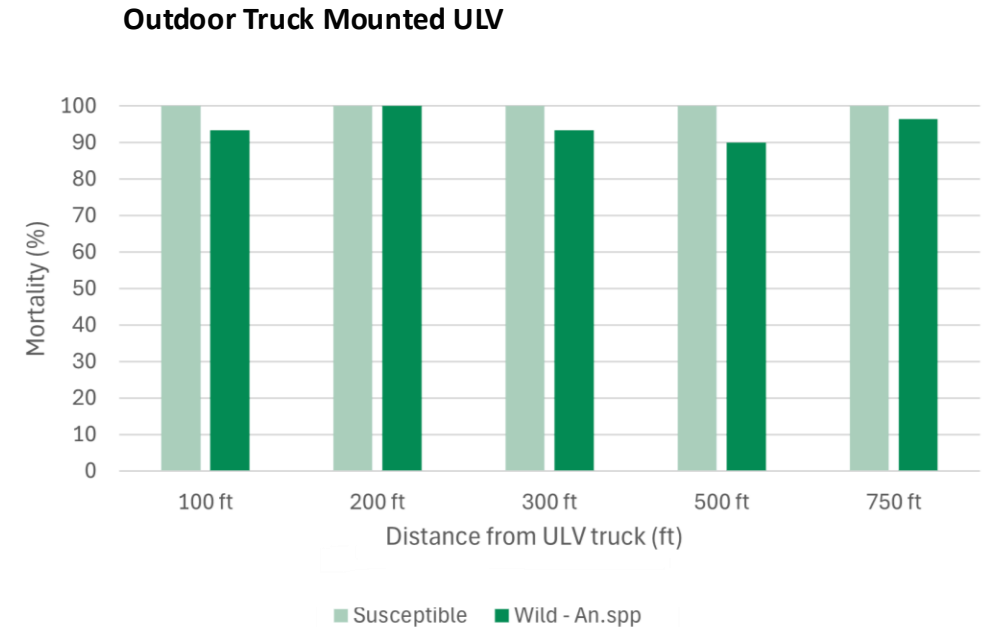
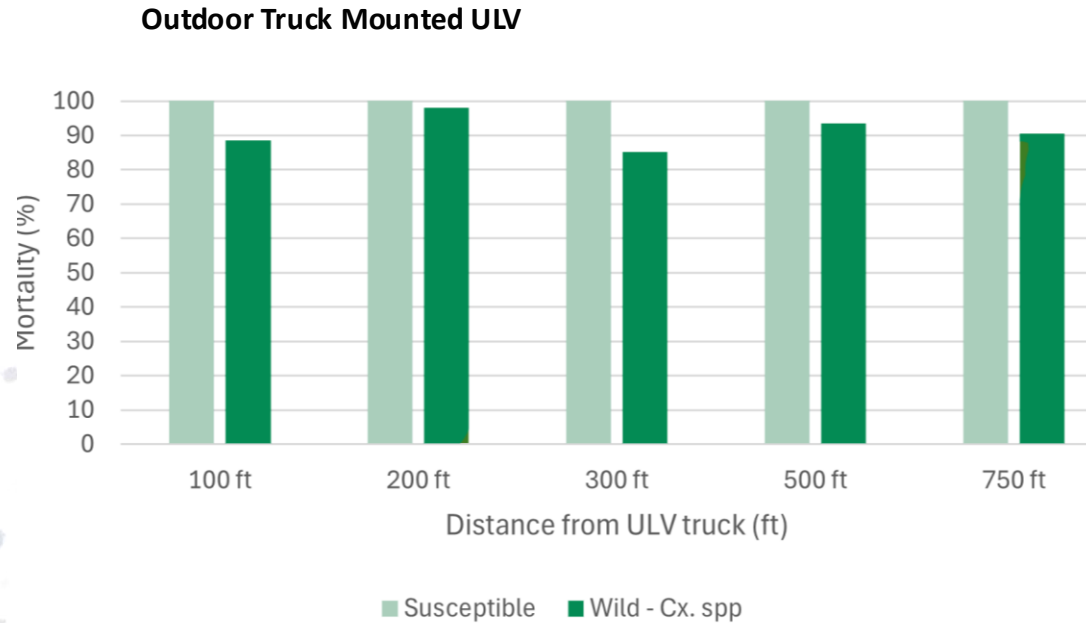




# California Technical Data

## California *Culex tarsalis* resistant strain and *Anopheles freeborni* resistant strain

Data courtesy of Sutter-Yuba County



# Florida Technical Data

## Florida resistant *Culex quinquefasciatus* strain

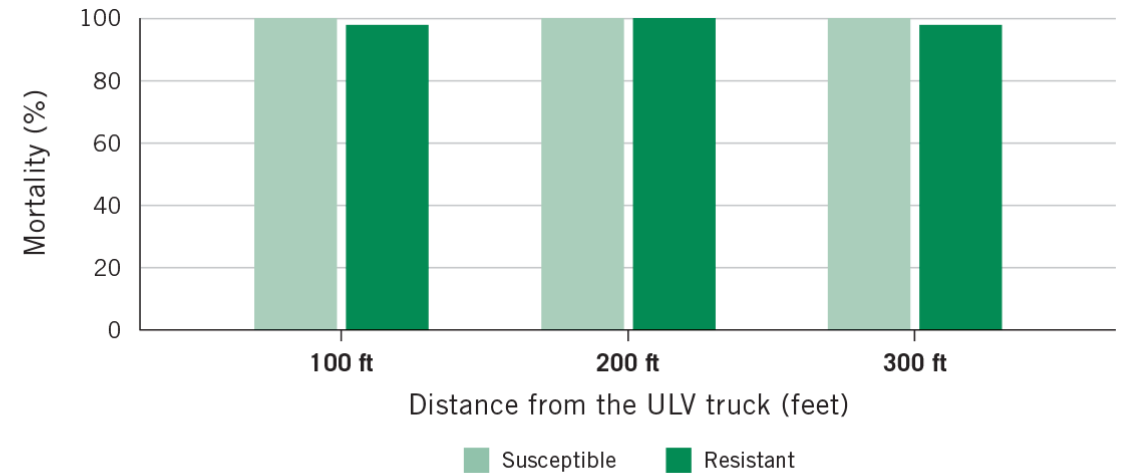
Data courtesy of Collier Mosquito Control District

### Bottle Bioassay

CDC diagnostic dose ( $\mu\text{g}$ )	Active ingredient	Diagnostic time (min)	Collier <i>Culex quinquefasciatus</i> % mortality at diagnostic time	Collier <i>Culex quinquefasciatus</i> % mortality at 2 hrs	Collier <i>Culex quinquefasciatus</i> % mortality at 24 hrs
15 $\mu\text{g}$ /bottle	Pyrethrum	45	38%	59%	27%*
20 $\mu\text{g}$ /bottle	d-Phenothrin	45	48%	51%	67%

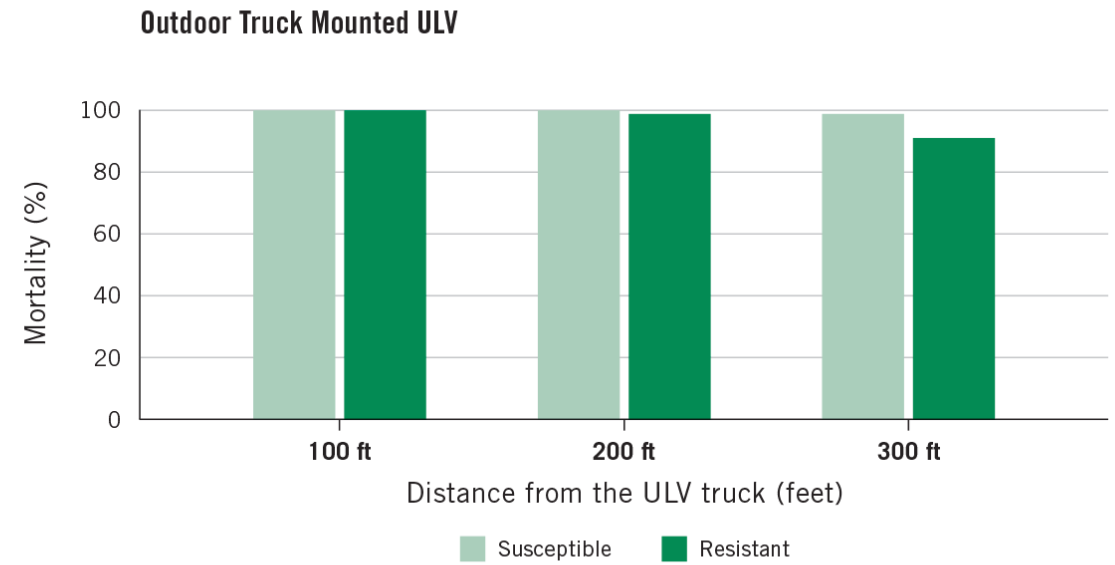
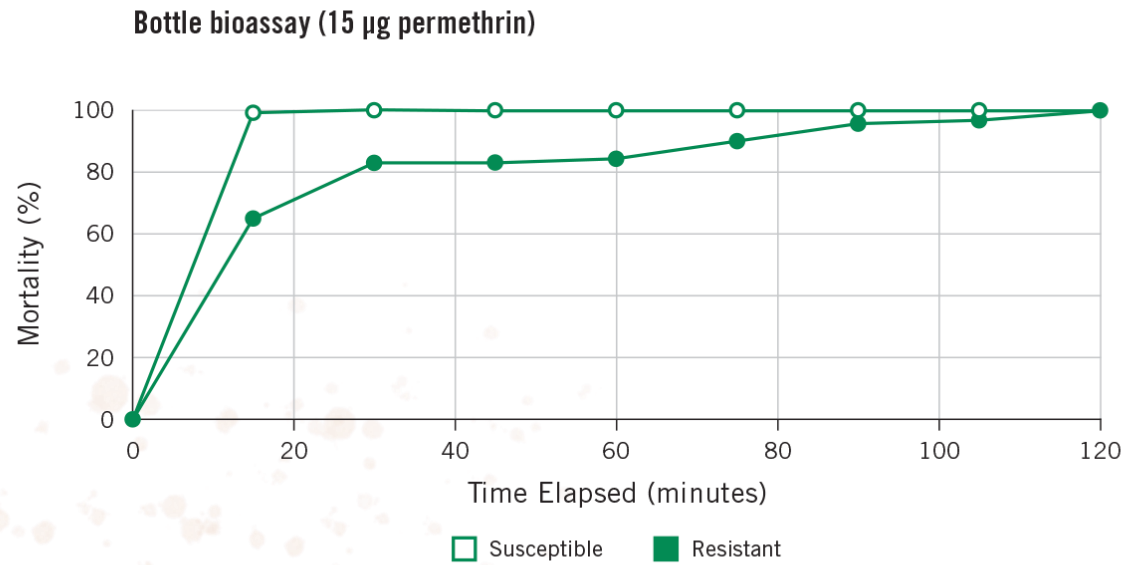
\*Recovery indicates *kdr* resistance

### Outdoor Truck Mounted ULV



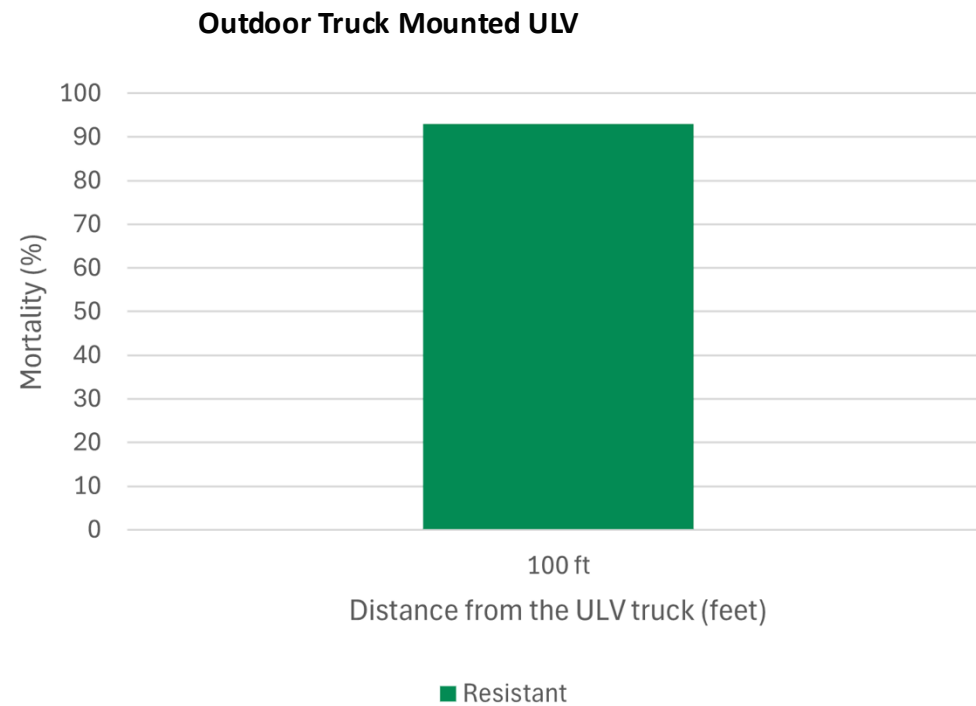
# Florida Technical Data

Florida resistant *Aedes aegypti* strain



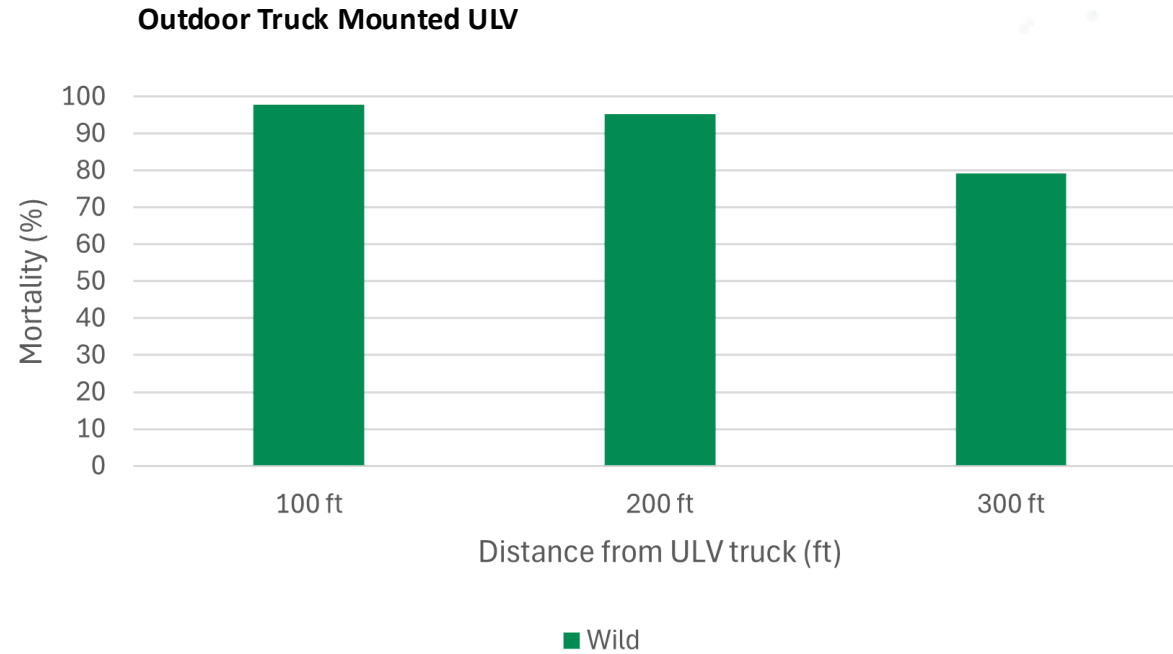
# Louisiana Technical Data

Louisiana *Culex quinquefasciatus* resistant strain



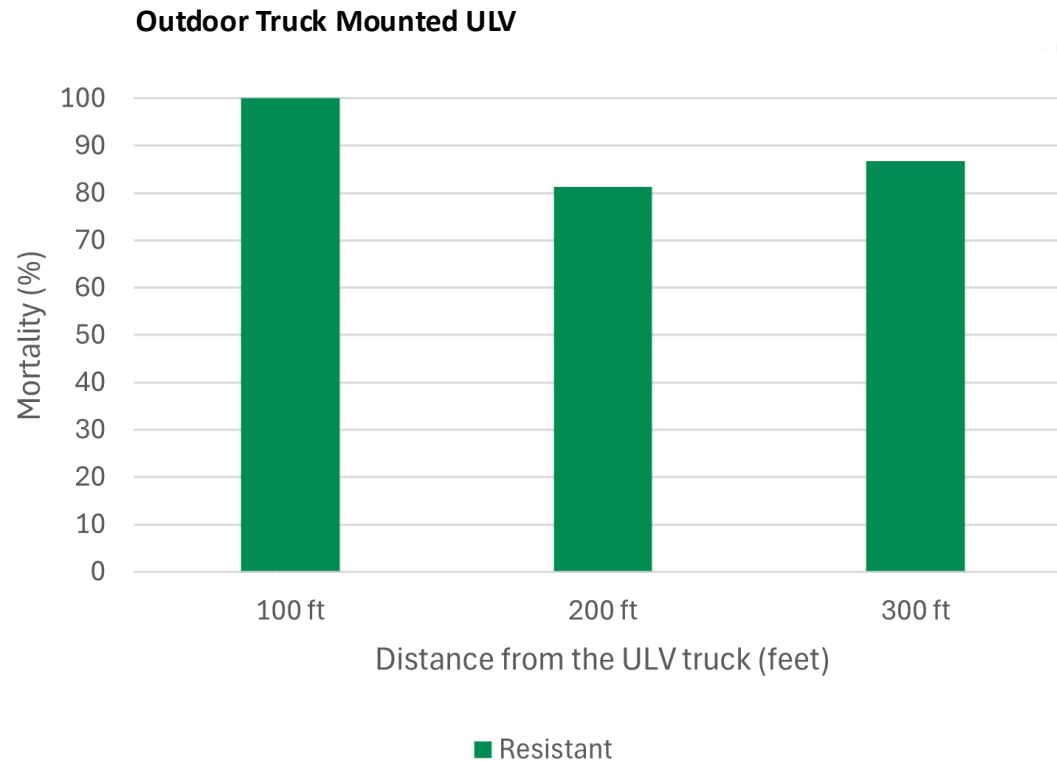
# Michigan Technical Data

Michigan Wild Mix of *Culex* spp (*Cx. pipiens* and *Cx. restuans*)



# New Jersey Technical Data

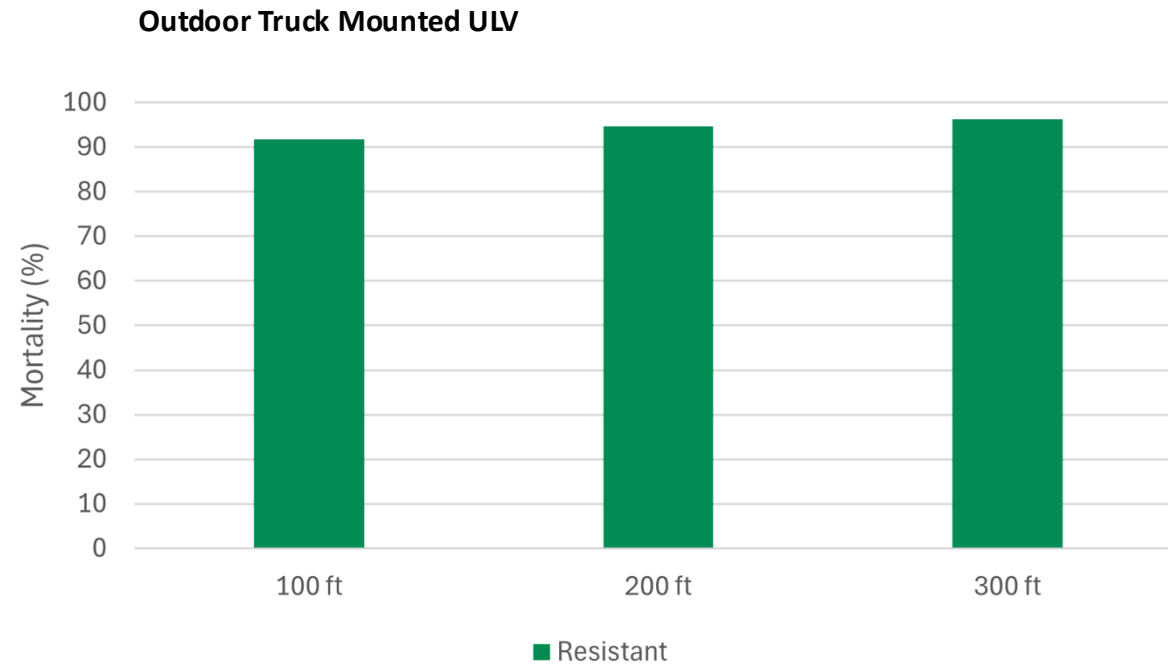
New Jersey *Aedes albopictus* resistant strain



# Utah Technical Data

## Utah *Culex tarsalis* resistant strain

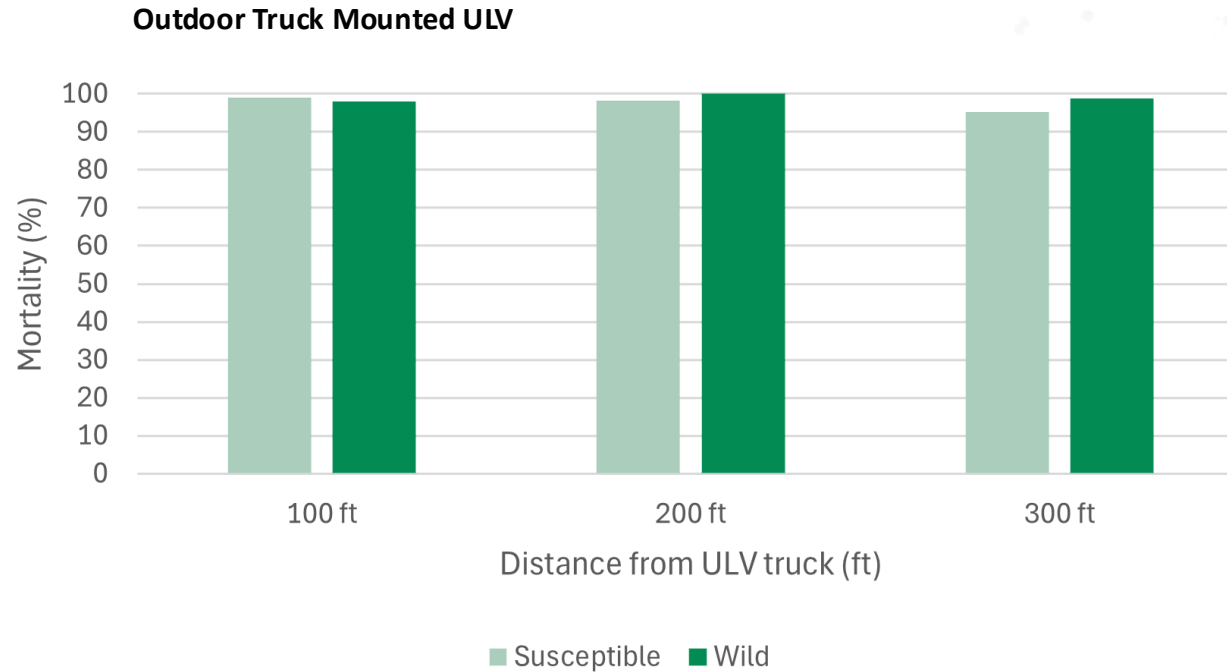
Data courtesy of Davis County



# Washington Technical Data

Washington Wild Mix of *Culex* spp (*Cx. pipiens* and *Cx. restuans*)

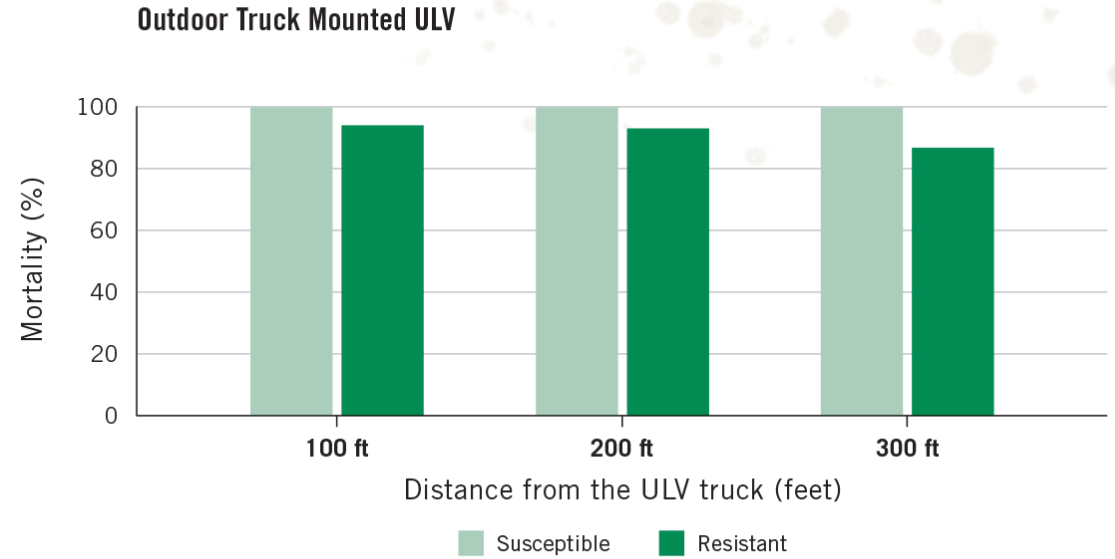
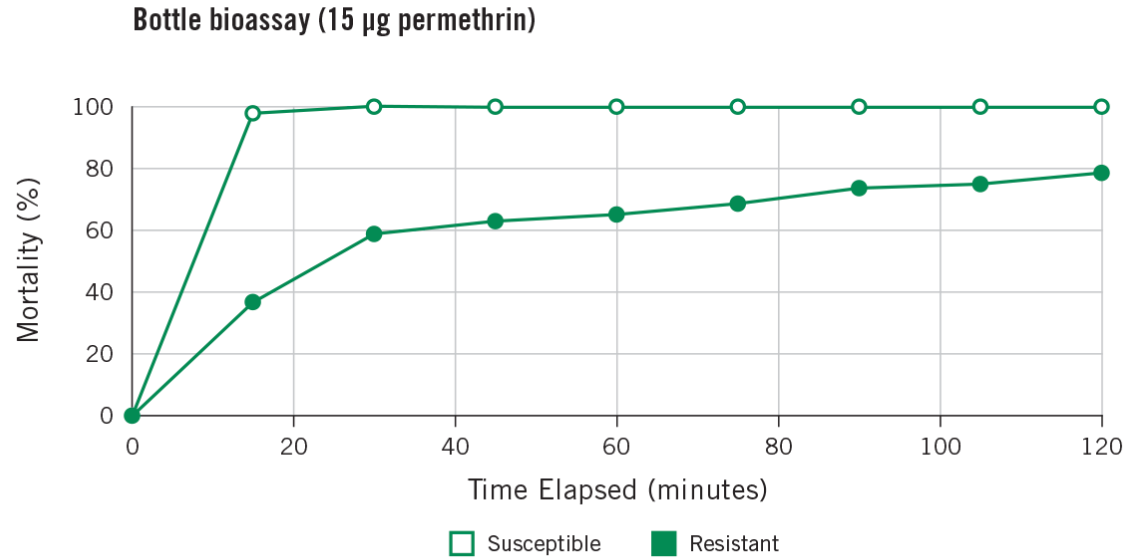
Data courtesy of Benton County





# Puerto Rico Technical Data

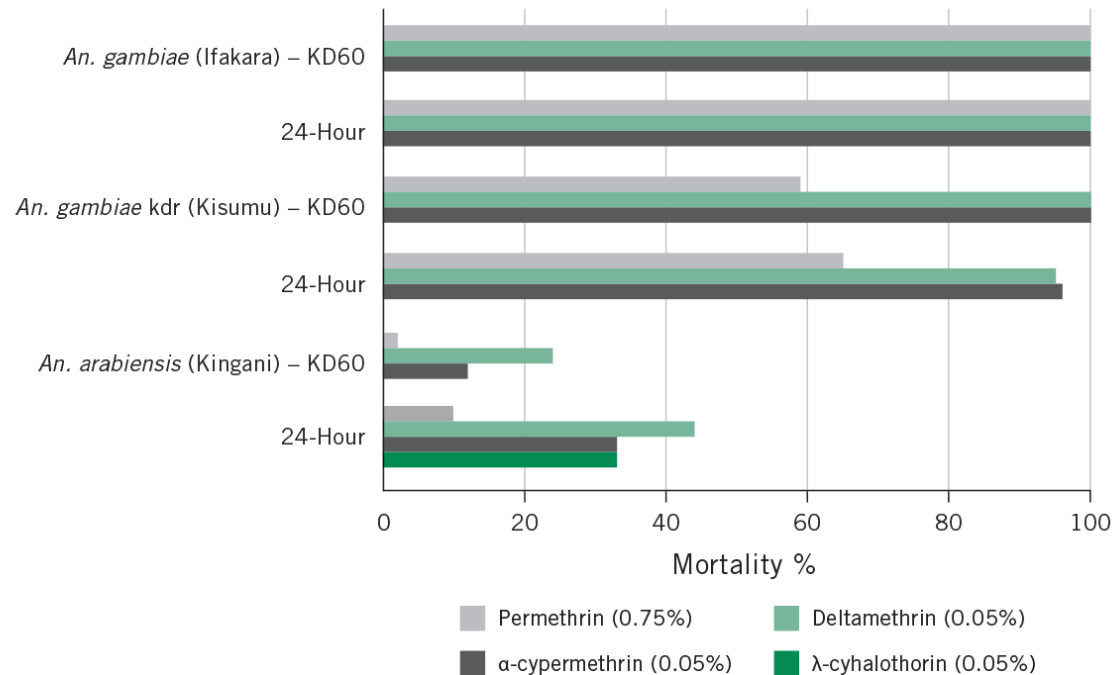
Puerto Rico resistant *Aedes aegypti* strain



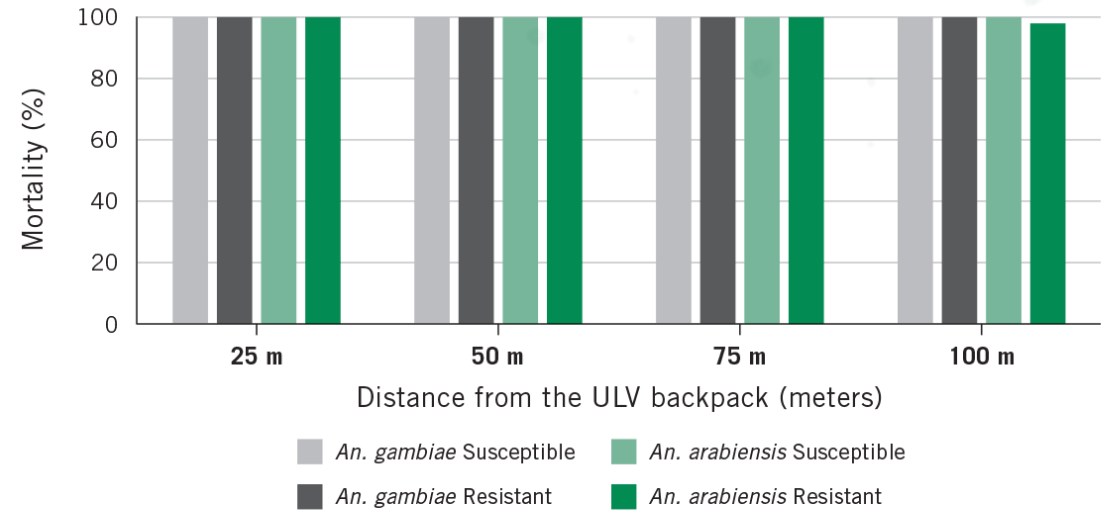
# Non-U.S. Technical Data

Tanzania resistant *Anopheles* strain

WHO Resistance Tube Tests

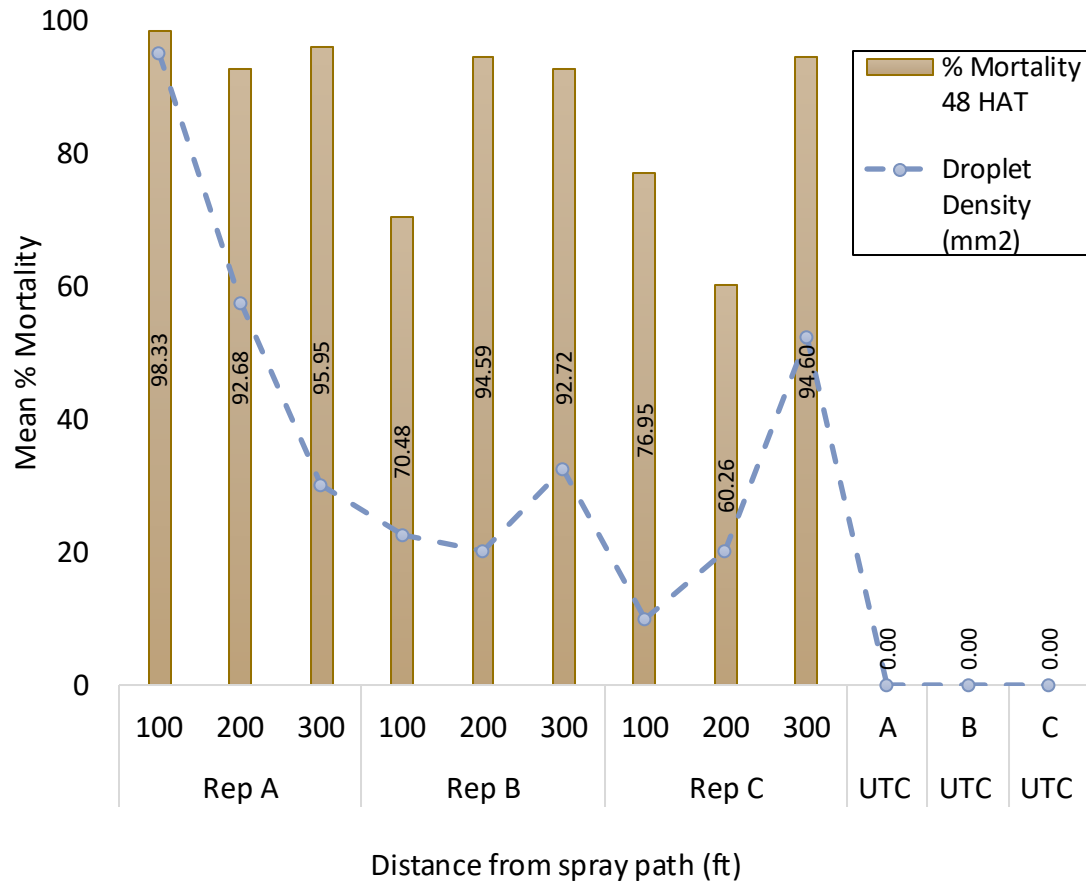


Outdoor Backpack ULV

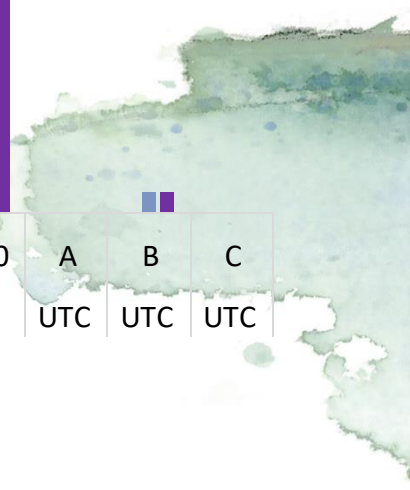
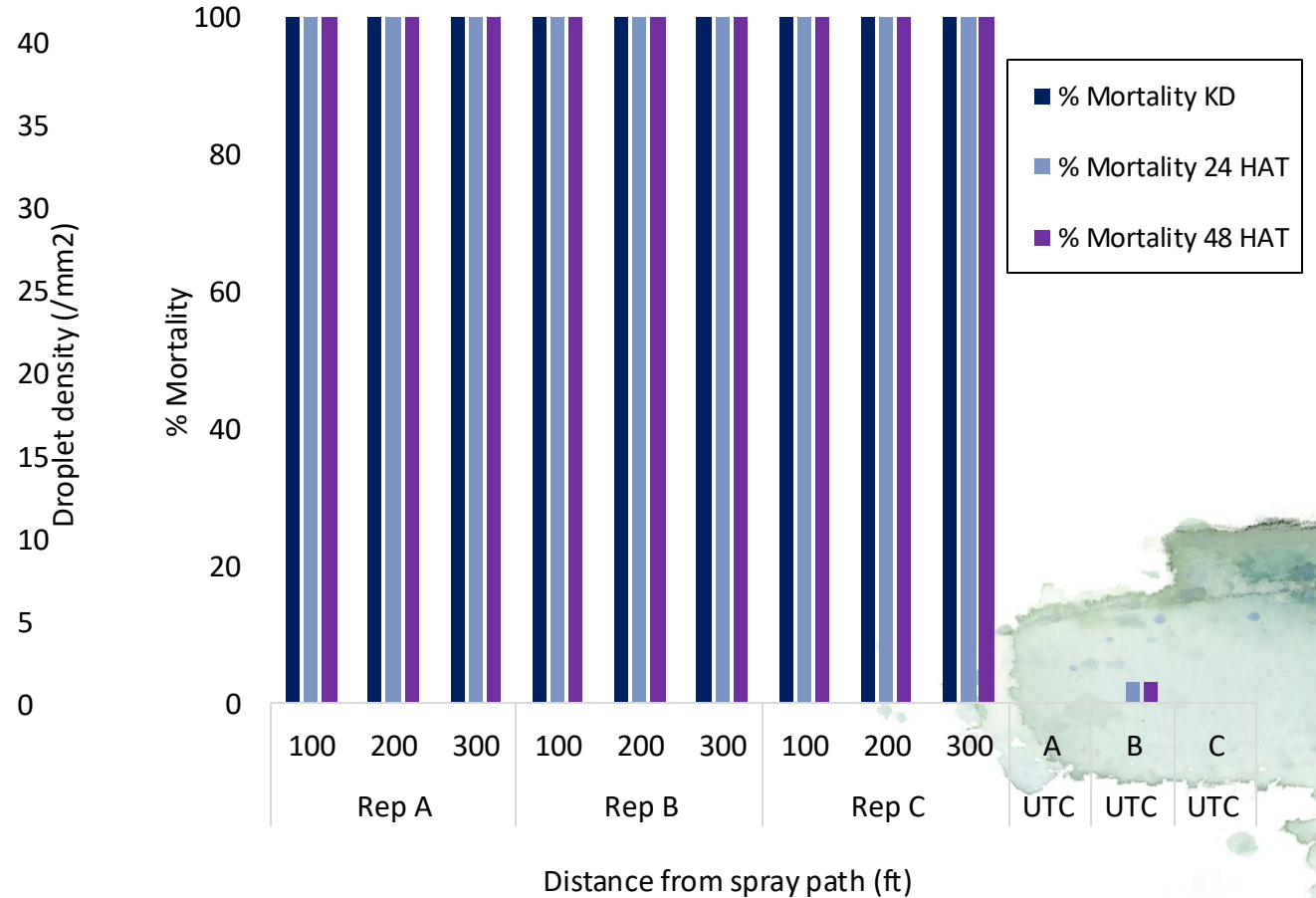


# Texas and South Carolina Data

Resistant *Culex quinquefasciatus*  
Wichita Falls, TX



Wild-caught *Aedes taeniorhynchus*  
Charleston, SC



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Thank You