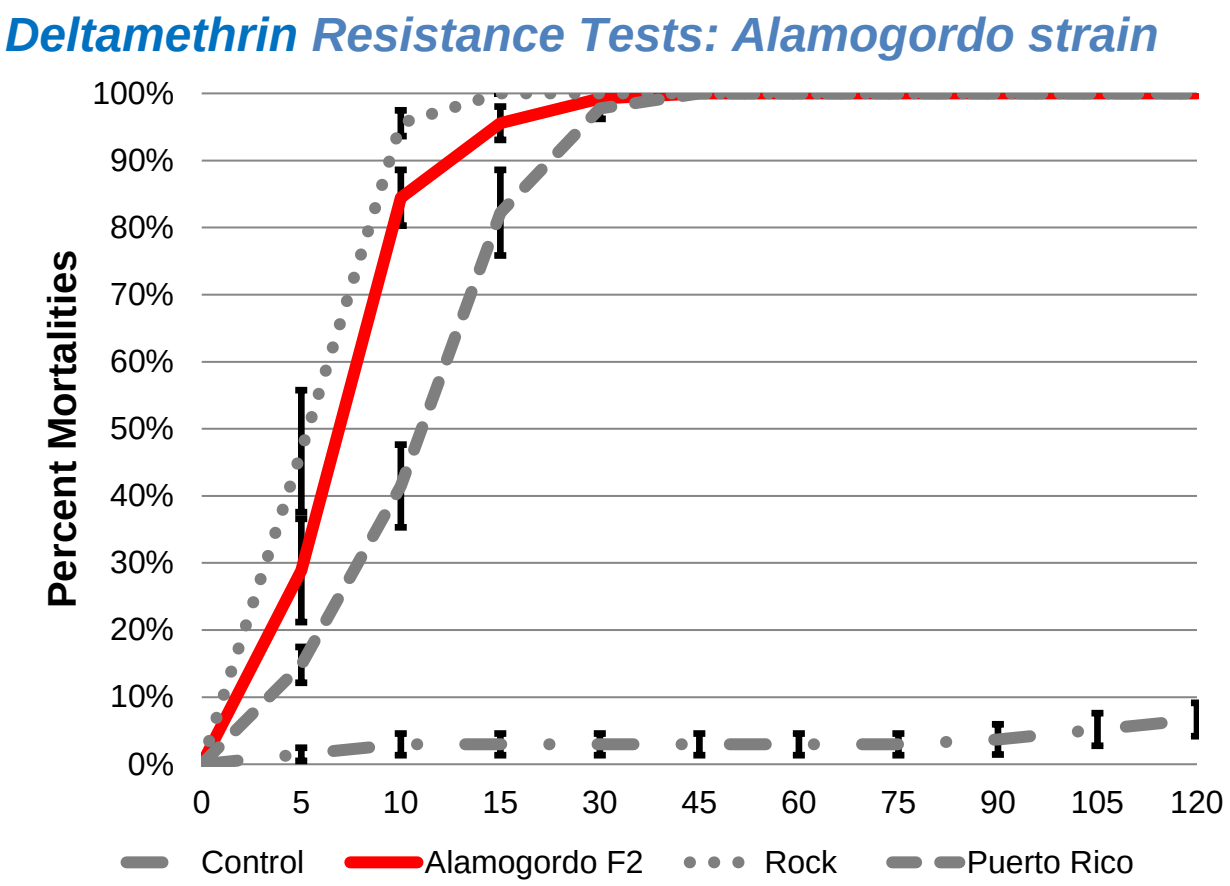

Figure A. Deltamethrin IR Bottle Test Results: 10.5 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. Puerto Rico is considered a pyrethroid-resistant strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different ($P<0.0001$) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was a significant difference between the the curves plotted for the deltamethrin-exposed Rock Strain and the Alamogordo Strain ($P<.0001$). The curve plotted for the Puerto Rico Strain (a known resistant strain) is significantly different than that plotted for the Alamogordo Strain ($P<.0001$). The curves plotted for the Puerto Rico strain and the Rock strain were also significantly different from each other ($P<.0001$).

Conclusion- Although we found small but statistical significant differences in the survival curve of the ROCK control and the curve plotted for mosquitoes from Alamogordo, the comparison with the curve plotted for the resistant Puerto Rico strain suggests that the Alamogordo strain is sensitive to deltamethrin.

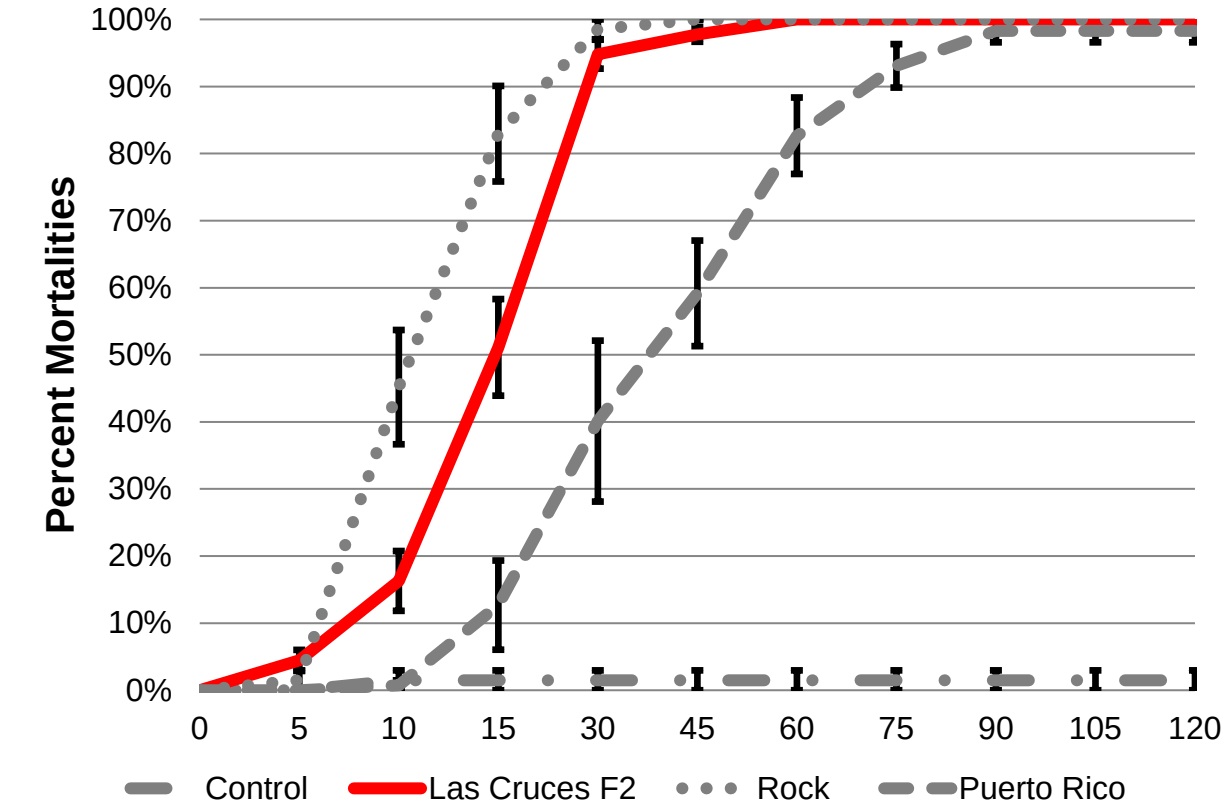

Figure B. Deltamethrin IR Bottle Test Results: 10.5 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. Puerto Rico is considered a pyrethroid-resistant strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different ($P<0.0001$) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was a significant difference between the curves plotted for the deltamethrin-exposed Rock Strain and the Las Cruces Strain ($P<.0001$). The curve plotted for the Puerto Rico Strain (a known resistant strain) is significantly different than that plotted for the Las Cruces Strain ($P<.0001$). The curves plotted for the Puerto Rico strain and the Rock strain were also significantly different from each other ($P<.0001$).

Conclusion- the Las Cruces *Aedes aegypti* strain showed resistance toward deltamethrin.

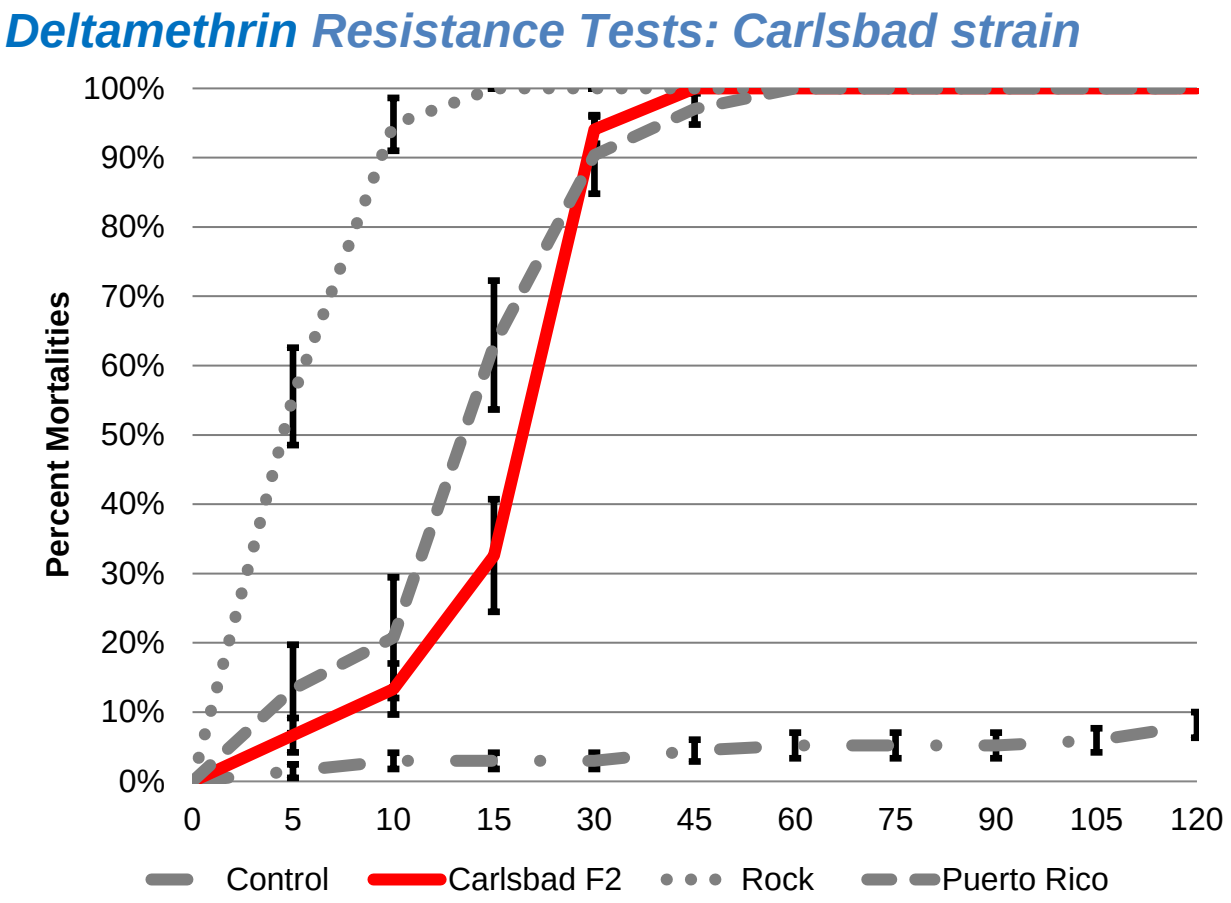

Figure C. Deltamethrin IR Bottle Test Results: 10.5 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. Puerto Rico is considered a pyrethroid-resistant strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different ($P<0.0001$) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was a significant difference between the the curves plotted for the deltamethrin-exposed Rock Strain and the Carlsbad Strain ($P<.0001$). The curve plotted for the Puerto Rico Strain (a known resistant strain) is significantly different than that plotted for the Carlsbad Strain ($P<.003$). The curves plotted for the Puerto Rico strain and the Rock strain were also significantly different from each other ($P<.0001$).

Conclusion- The Carlsbad *Aedes aegypti* strain shows resistance to deltamethrin.

Deltamethrin Resistance Tests: Roswell strain

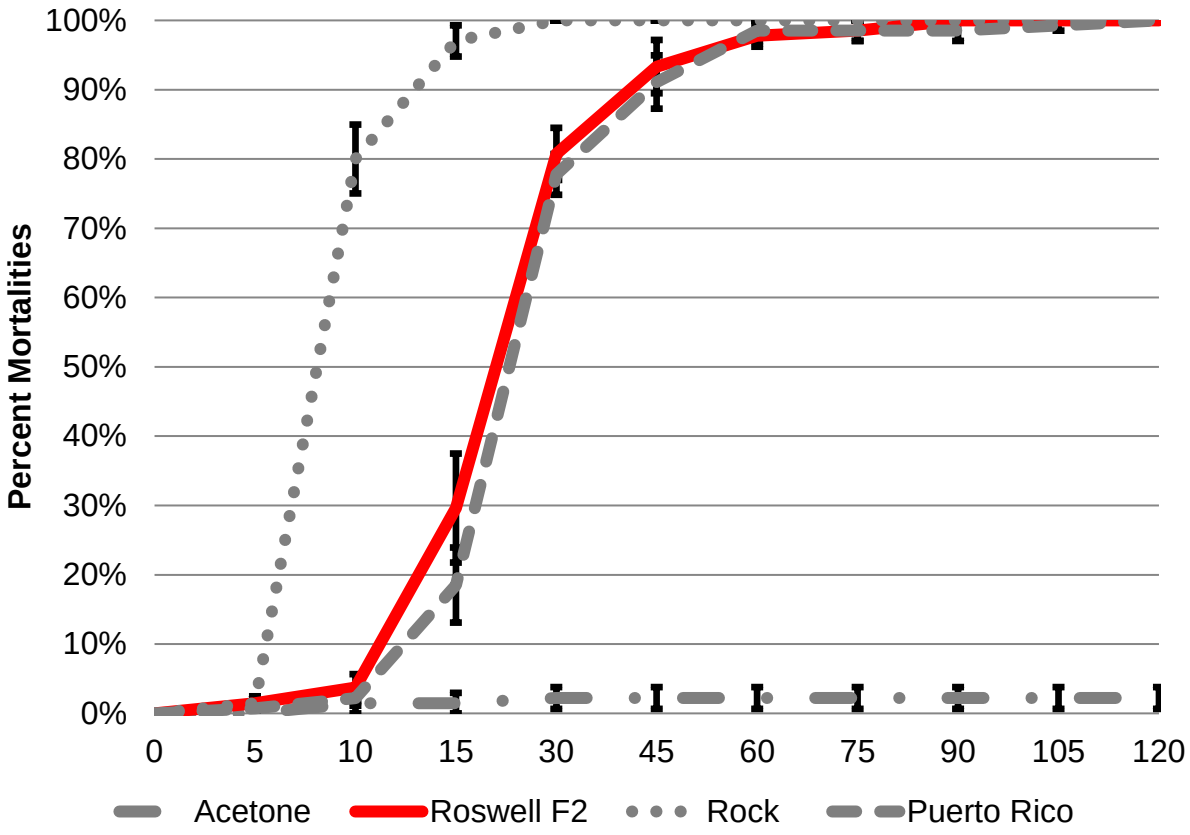

Figure D. Deltamethrin IR Bottle Test Results: 10.5 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. Puerto Rico is considered a pyrethroid-resistant strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different (P<0.0001) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was a significant difference between the curves plotted for the deltamethrin-exposed Rock Strain and the Roswell Strain (P<.0001). The curve plotted for the Puerto Rico Strain (a known resistant strain) is not significantly different than that plotted for the Roswell Strain (P=.091). The curves plotted for the Puerto Rico strain and the Rock strain were also significantly different from each other (P<.0001).

Conclusion- The Roswell *Aedes aegypti* strain shows resistance towards deltamethrin.

Etofenprox Resistance Tests: Roswell strain

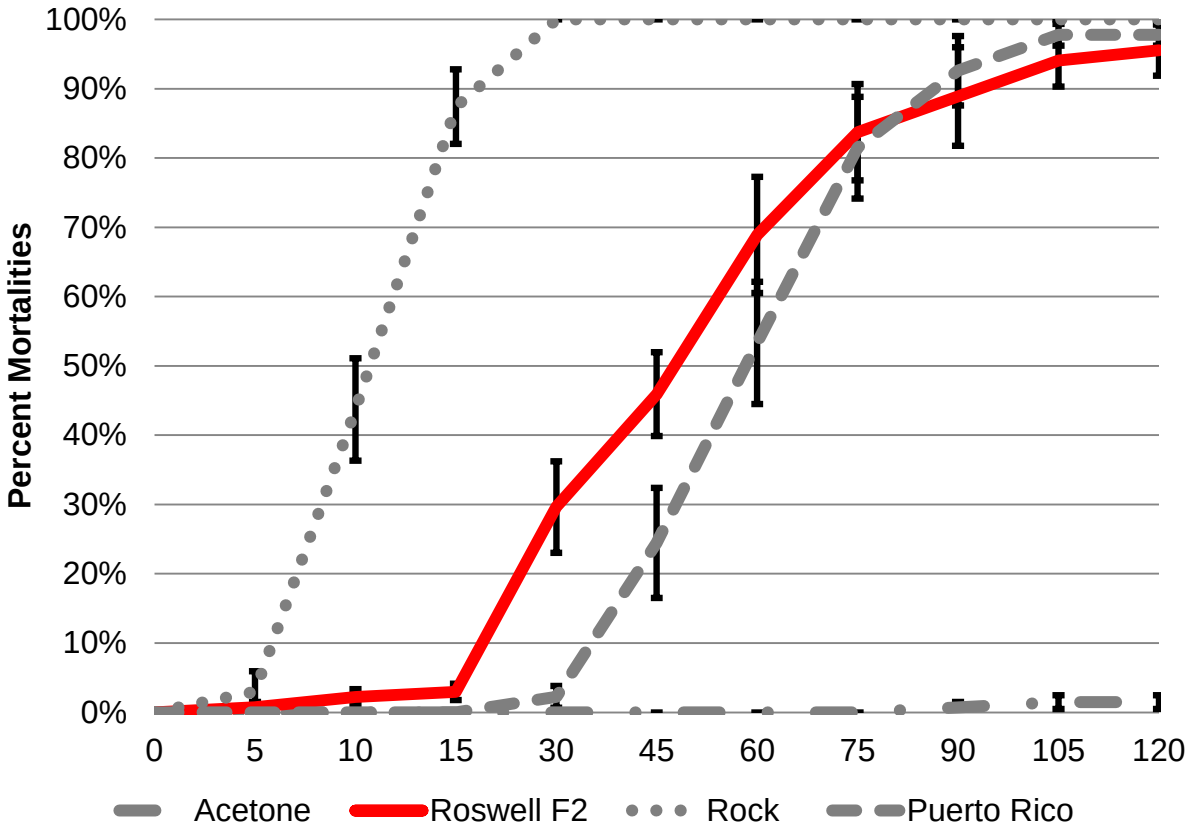

Figure E. Etofenprox IR Bottle Test Results: 37.5 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. Puerto Rico is considered a pyrethroid-resistant strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different ($P<0.0001$) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was a significant difference between the curves plotted for the etofenprox-exposed Rock Strain and the Roswell Strain ($P<.0001$). The curve plotted for the Puerto Rico Strain (a known resistant strain) is significantly different than that plotted for the Roswell Strain ($P=.034$). The curves plotted for the Puerto Rico strain and the Rock strain were also significantly different from each other ($P<.0001$).

Conclusion- The Roswell *Aedes aegypti* strain shows resistance towards etofenprox.

Etofenprox Resistance Tests: Las Cruces strain

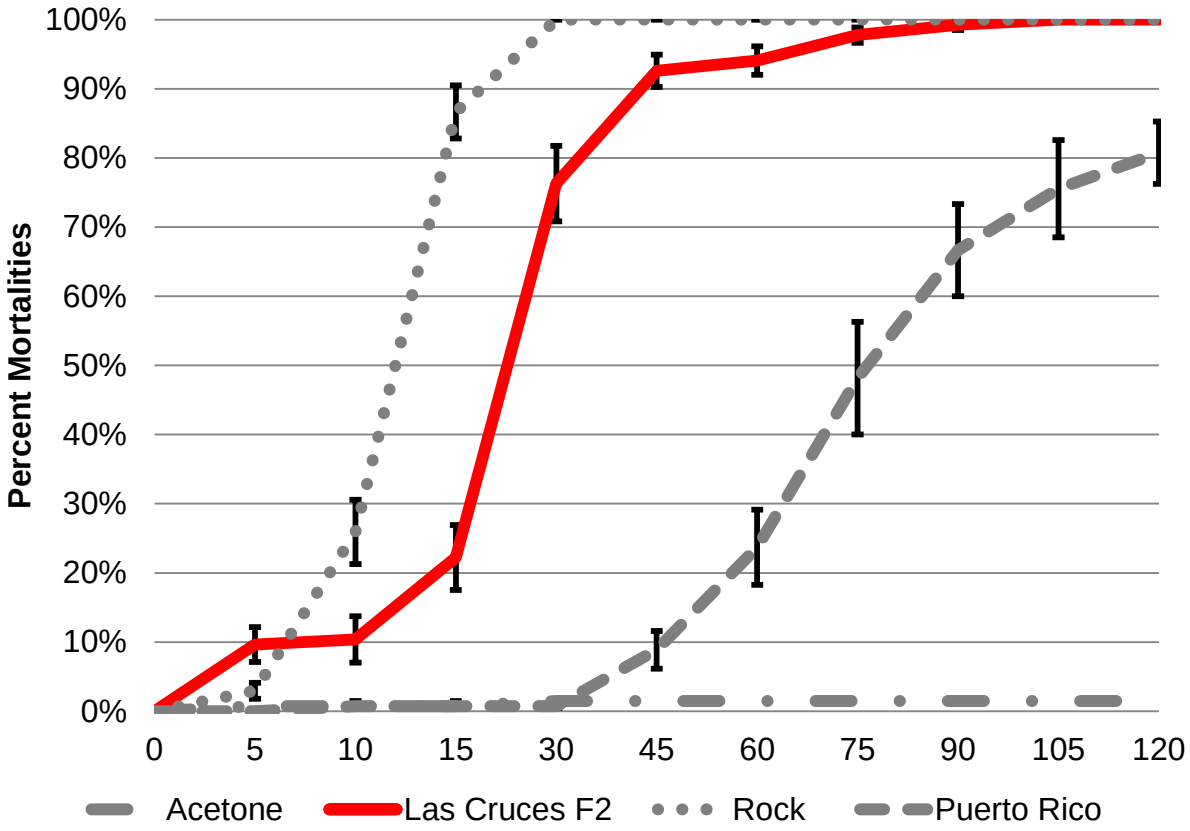

Figure F. Etofenprox IR Bottle Test Results: 37.5 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. Puerto Rico is considered a pyrethroid-resistant strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different ($P<0.0001$) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was a significant difference between the curves plotted for the etofenprox-exposed Rock Strain and the Las Cruces Strain ($P<.0001$). The curve plotted for the Puerto Rico Strain (a known resistant strain) is significantly different than that plotted for the Las Cruces Strain ($P<.0001$). The curves plotted for the Puerto Rico strain and the Rock strain were also significantly different from each other ($P<.0001$).

Conclusion- The Las Cruces *Aedes aegypti* strain shows resistance towards etofenprox.

Chlorpyrifos Resistance Tests: Las Cruces strain

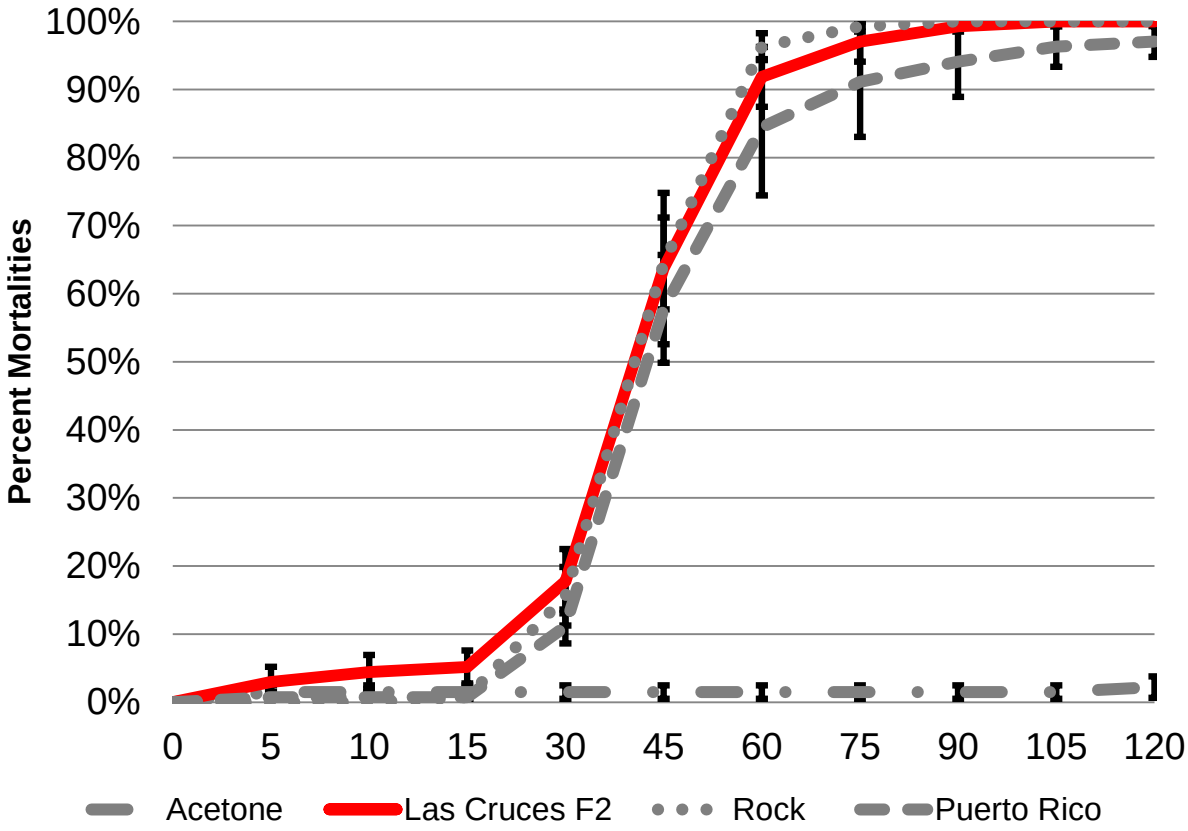

Figure G. Chlorpyrifos IR Bottle Test Results: 40 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. Puerto Rico is considered a pyrethroid-resistant strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different ($P<0.0001$) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was no significant difference between the curves plotted for the chlorpyrifos-exposed Rock Strain and the Las Cruces Strain ($P=.589$). The curve plotted for the Puerto Rico Strain (a known resistant strain) is significantly different than that plotted for the Las Cruces Strain ($P=.014$). The curves plotted for the Puerto Rico strain and the Rock strain were also significantly different from each other ($P=.005$).

Conclusion- The Las Cruces *Aedes aegypti* strain is sensitive towards chlorpyrifos.

Chlorpyrifos Resistance Tests: Alamogordo strain

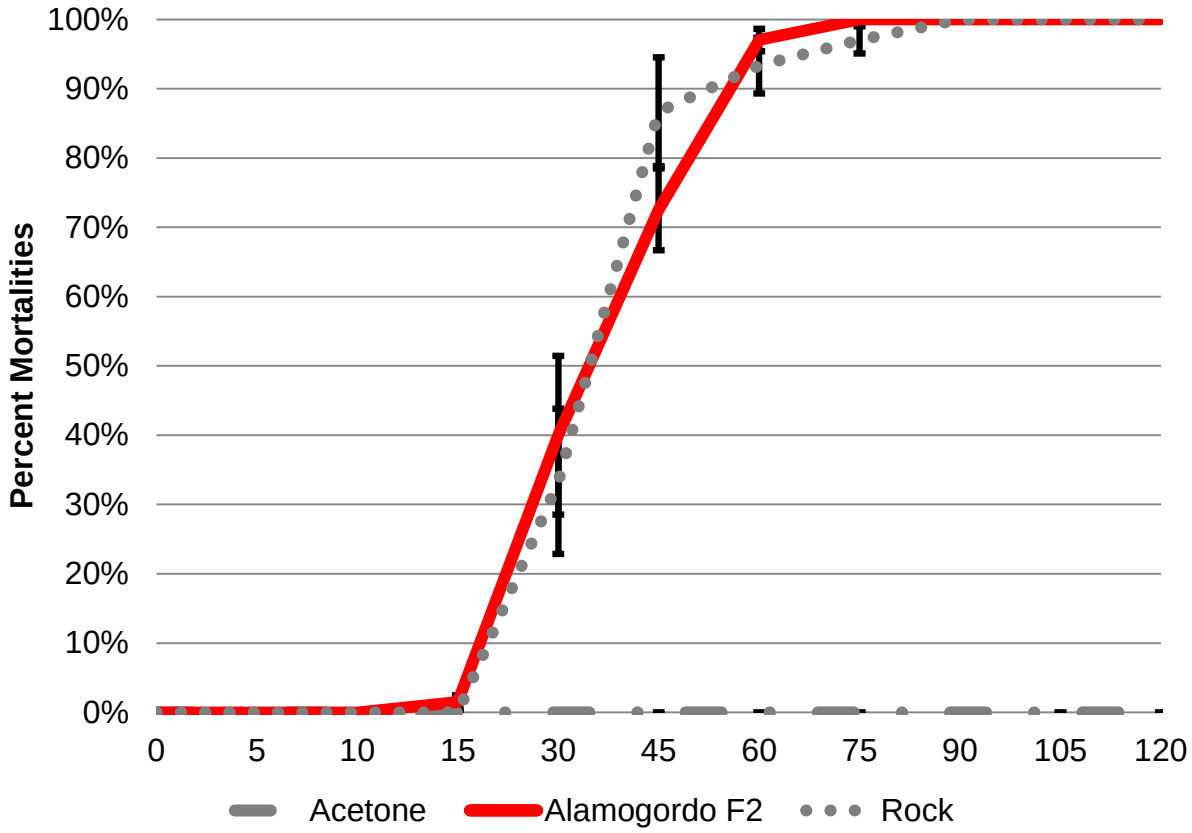

Figure H. Chlorpyrifos IR Bottle Test Results: 40 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different ($P<0.0001$) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was not a significant difference between the curves plotted for the chlorpyrifos-exposed Rock Strain and the Alamogordo Strain ($P=.984$).

Conclusion- The Alamogordo *Aedes aegypti* strain is sensitive to chlorpyrifos.

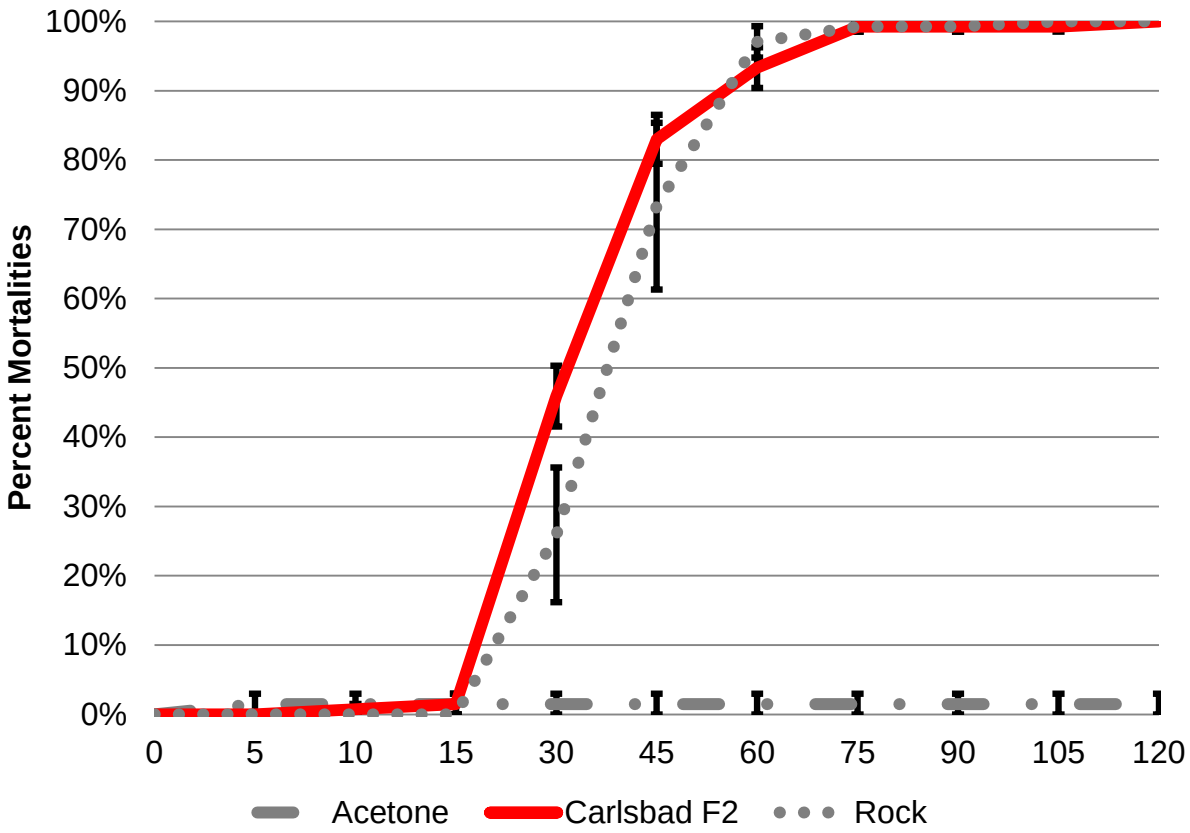

Figure I. Chlorpyrifos IR Bottle Test Results: 40 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different ($P<0.0001$) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was a significant difference between the curves plotted for the chlorpyrifos-exposed Rock Strain and the Carlsbad Strain ($P=.028$).

Conclusion- The Carlsbad *Aedes aegypti* strain shows sensitivity towards chlorpyrifos.

Chlorpyrifos Resistance Tests: Roswell strain

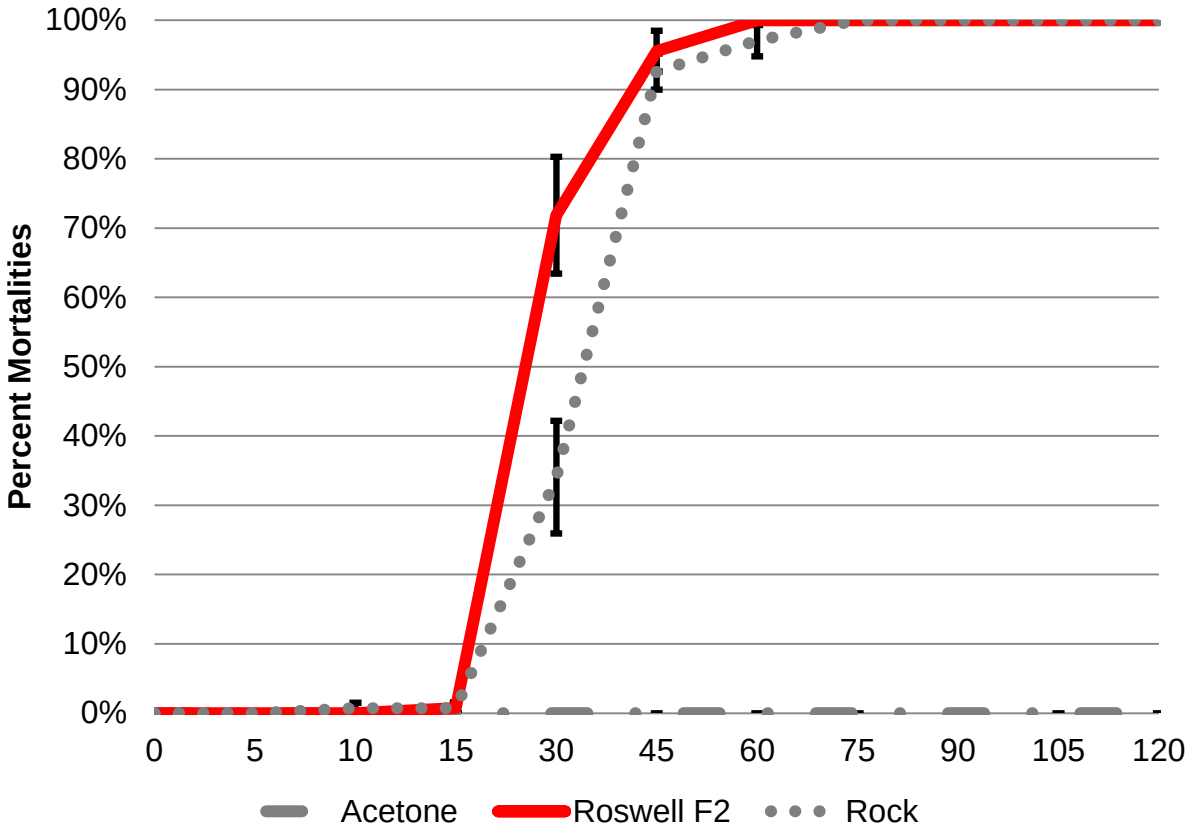

Figure J. Chlorpyrifos IR Bottle Test Results: 40 ug/bottle. Shown are means and standard error bars for different groups of mosquitoes. Rock is considered a pyrethroid-sensitive strain. The control was treated with acetone only.

Results- The control (Acetone) mortality curve was significantly different ($P<0.0001$) from the curves for all other treatments with little to no mortalities. Kaplan Meier statistical analysis confirmed that there was a significant difference between the the curves plotted for the chlorpyrifos-exposed Rock Strain and the Roswell Strain ($P<.0001$).

Conclusion- The Roswell *Aedes aegypti* strain is sensitive to chlorpyrifos.

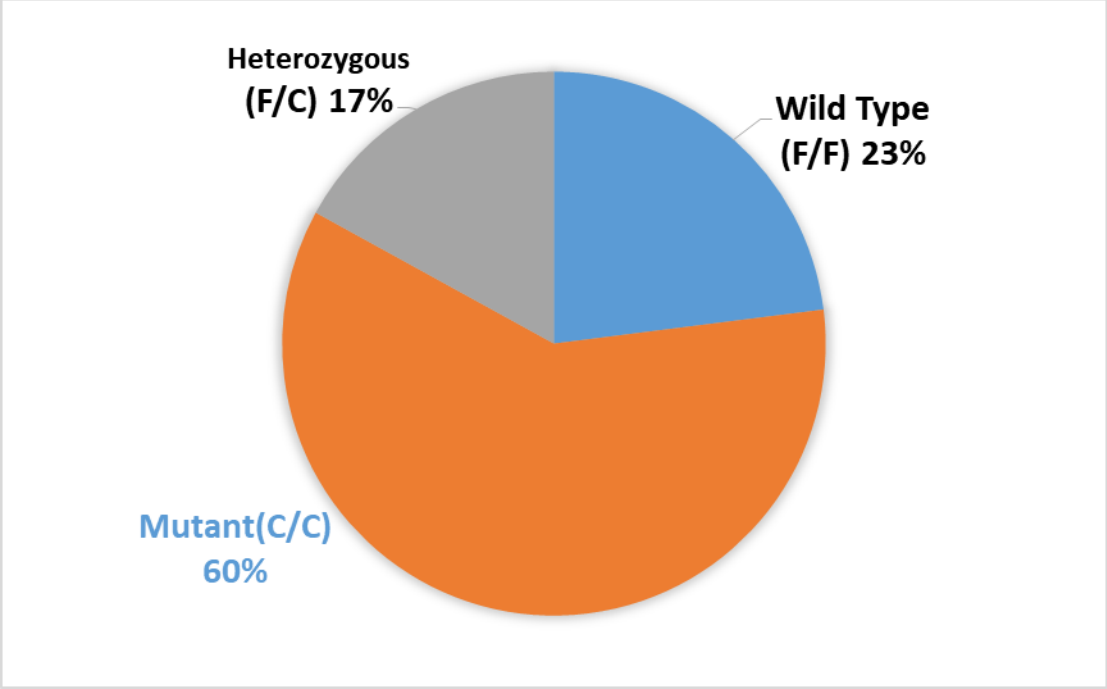

Figure K: kdr position 1534 Genotypes in 50 mosquitoes from New Mexico. The figure shows the percentage of heterozygous and homozygous mosquitoes. The resistant mutants are shown in orange, wild type in blue, and heterozygous in grey.

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NC_035109_aegypt        MTEDSDSISEEERSLFRPFTRESLAAIERRIADAEAKQRELEKKRAEGETGFGRKKKKKE  60
NW_004765908_Musca      MTEDSDSISEEERSLFRPFTRESLLQIEQRIAEHEKQ-KELERKRA---------AEGEQ  50
                        ************************  **:***: * : :***:***         : ::

NC_035109_aegypt        IRYDDEDEDEGPQPDSTLEQGVPIPVRMQGSFPPELASTPLEDIDSYYANQRTFVVVSKG  120
NW_004765908_Musca      IRYDDEDEDEGPQPDPTLEQGVPIPVRMQGSFPPELASTPLEDIDPFYSNVLTFVVISKG  110
                        ************** ***************************** :*:*  ****:***

NC_035109_aegypt        KDIFRFSATNALYVLDPFNPIRRVAIYILVHPLFSFFIITTILTNCILMIMPSTPTVEST  180
NW_004765908_Musca      KDIFRFSASKAMWLLDPFNPIRRVAIYILVHPLFSLFIITTILTNCILMIMPTTPTVEST  170
                        ********::*:::*********************:****************:*******

NC_035109_aegypt        EVIFTGIYTFESAVKVMARGFILQPFTYLRDAWNWLDFVVIALAYVTMGIDLGNLAALRT  240
NW_004765908_Musca      EVIFTGIYTFESAVKVMARGFILCPFTYLRDAWNWLDFVVIALAYVTMGIDLGNLAALRT  230
                        ********************** ***********************************

NC_035109_aegypt        FRVLRALKTVAIVPGLKTIVGAVIESVKNLRDVIILTMFSLSVFALMGLQIYMGVLTQKC  300
NW_004765908_Musca      FRVLRALKTVAIVPGLKTIVGAVIESVKNLRDVIILTMFSLSVFALMGLQIYMGVLTQKC  290
                        ************************************************************

NC_035109_aegypt        IREFPMDGSWGNLSDENWERFNNNDSNWYFSETGD-TPLCGNSSGAGQCEEGYICLQGYG  359
NW_004765908_Musca      IKRFPLDGSWGNLTDENWFLHNSNSSNWFTENDGESYPVCGNVSGAGQCGEDYVCLQGFG  350
                        *:.**:*******:****  .*.*.***: .: *:  *:*** ****** *.*:**
                                                                              419

NC_035109_aegypt        DNPNYGYTSFDTFGWAFLSAFRLMTQDYWENLYQLVLRSAGPWHMLFFIVIIFLGSFYLV  419
NW_004765908_Musca      PNPNYDYTSFDSFGWAFLSAFRLMTQDFWEDLYQHVLQAAGPWHMLFFIVIIFLGSFYLV  410
                         ****.*****:***************:**:*** **::*****************
                                                                              410

NC_035109_aegypt        NLILAIVAMSYDELQKRAEEEEAAEEEALREAEEAAAAKAAKLEAQAAA-----------  468
NW_004765908_Musca      NLILAIVAMSYDELQKKAEEEEAAEEEAIREAEEAAAAKAAKLEERANVAAQAAQDAADA  470
                        ****************:***********:*************** :* .

NC_035109_aegypt        AAAAANPEIAKSPSDFSCHSYELFVNQEKGNDDNNKEKMSIRSEGLESVSEITRTTAPTA  528
NW_004765908_Musca      AAAALHPEMAKSP-TYSCISYELFVGGEKGNDDNNKEKMSIRSVEVESESVSVIQRQPAP  529
                        **** :**:****  :** ******. ****************  :** *  .    *:

NC_035109_aegypt        TAAGTAKARKVSAGVAAFQKASLSLPGSPFNLRRGSRGSHQFTIRNGRGRFVGVPGSDRK  588
NW_004765908_Musca      TTAPATKVR-------KVSTTSLSLPGSPFNLRRGSRSSHKYTIRNGRGRF-GIPGSDRK  581
                        *:* ::*.*        ...:****************.**::********* *:******

NC_035109_aegypt        PLVLSTYLDAQEHLPYADDSNAVTPMSEENGAIIVPVYYANLGSRHSSYTSHQSRISYTS  648
NW_004765908_Musca      PLVLQTYQDAQQHLPYADDSNAVTPMSEENGAIIVPAYYCNLGSRHSSYTSHQSRISYTS  641
                        ****.** ***:************************.**.********************

NC_035109_aegypt        HGDLLGGMT--------KESRLRNRSARNTNHSIVPPPNMSGPNMSYVDSNHKGQRDFDM  700
NW_004765908_Musca      HGDLLGGMAAMGASTMTKESKLRSRNTRNQSIGAATNGGSSTAGGGYPDANHKEQRDYEM  701
                        ********:        ***:**.*.:** . . .   . *  . .* *:*** ***::*

NC_035109_aegypt        SQDCTDEAGKIKHNDNPFIEPSQTQTVVDMKDVMVLNDIIEQAAGRHSRASDHGVSVYYF  760
NW_004765908_Musca      GQDYTDEAGKIKHHDNPFIEPVQTQTVVDMKDVMVLNDIIEQAAGRHSRASERG------  755
                        .** *********:******* ****************************::*

NC_035109_aegypt        PTEDDDEDGPTFKDKALEFTMRMIDVFCVWDCCWVWLKFQEWVAFIVFDPFVELFITLCI  820
NW_004765908_Musca      --EDDDEDGPTFKDIALEYILKGIEIFCVWDCCWVWLKFQEWVSFIVFDPFVELFITLCI  813
                          ************ ***: :: *::*****************:****************

NC_035109_aegypt        VVNTLFMALDHHDMDPDMERALKSGNYFFTATFAIEATMKLIAMSPKYYFQEGWNIFDFI  880
NW_004765908_Musca      VVNTMFMAMDHHDMNPELEKVLKSGNYFFTATFAIEASMKLMAMSPKYYFQEGWNIFDFI  873
                        ****:***:*****:*::*:.***************:***:************930*******

NC_035109_aegypt        IVALSLLELGLEGVQGLSVLRSFRLLRVFKLAKSWPTLNLLISIMGRTMGALGNLTFVLC  940
NW_004765908_Musca      IVALSLLELGLEGVQGLSVLRSFRLLRVFKLAKSWPTLNLLISIMGRTMGALGNLTFVLC  933
                        ************************************************923*******

                                                                  989     996

NC_035109_aegypt        IIIFIFAVMGMQLFGKNYIDNVDRFPDKDLPRWNFTDFMHSFMIVFRVLCGEWIESMWDC  1000
NW_004765908_Musca      IIIFIFAVMGMQLFGKNYIDHKDRFKDHELPRWNFTDFMHSFMIVFRVLCGEWIESMWDC  993
                        ********************: *** *::*****************982     989
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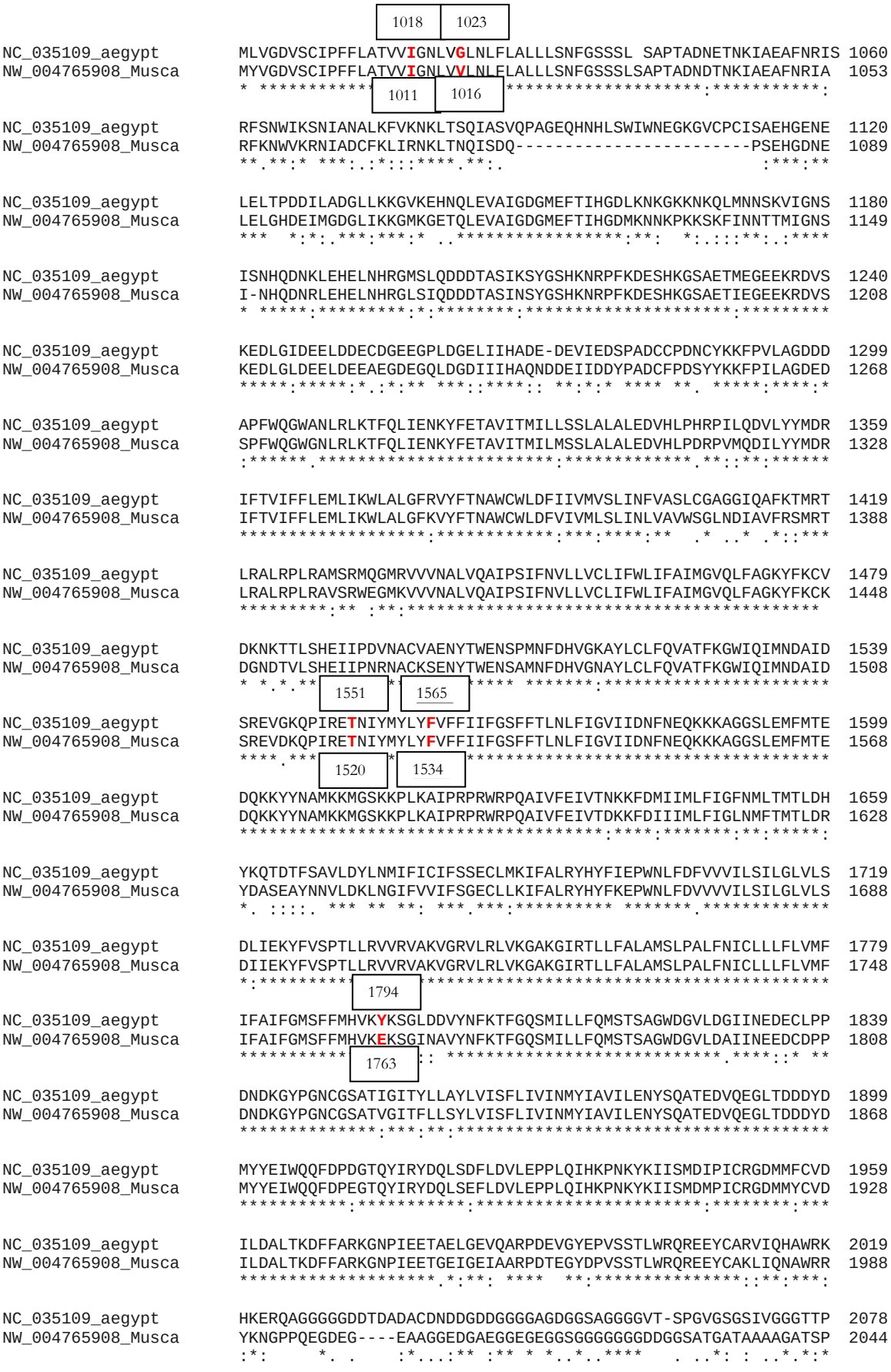
1018
1023
NC_035109_aegypt MLVGDVSCIPFFLATVVIGNLVGLNLFLALLLSNFGSSSL SAPTADNETNKIAEAFNRIS 1060
NW_004765908_Musca MYVGDVSCIPFFLATVVIGNLVVLNLFLALLLSNFGSSSLSAPTADNDTNKIAEAFNRIA 1053
1011
1016
NC_035109_aegypt RFSNWIKSNIANALKFVKNKLTSQIASVQPAGEQHNHLSWIWNEGKGVCPCISAEHGENE 1120
NW_004765908_Musca RFKNWVKRNIADCFKLIRNKLTNQISDQ----------PSEHGDNE 1089
NC_035109_aegypt LELTPDDILADGLLKKGVKEHNQLEVAIGDGMEFTIHGDLKNKGKKNKQLMNNSKVIGNS 1180
NW_004765908_Musca LELGHDEIMGDGLIKKGMKGETQLEVAIGDGMEFTIHGDMKNNKPKKSKFINNTTMIGNS 1149
NC_035109_aegypt ISNHQDNKLEHELNHRGMSLQDDDTASIKSYGSHKNRPFKDESHKGSAETMEGEEKRDVS 1240
NW_004765908_Musca I-NHQDNRLEHELNHRGLSIQDDDTASINSYGSHKNRPFKDESHKGSAETIEGEEKRDVS 1208
NC_035109_aegypt KEDLGIDEELDDECDGEEGPLDGELIIHADE-DEVIEDSPADCCPDNCYKKFPVLAGDDD 1299
NW_004765908_Musca KEDLGLDEELDEEAEGDEGQLDGDIIIHAQNDDEIIDDYPADCFPDSYYKKFPILAGDED 1268
NC_035109_aegypt APFWQGWANLRLKTFQLIENKYFETAVITMILLSSLALALEDVHLPHRPILQDVLYYMDR 1359
NW_004765908_Musca SPFWQGWGNLRLKTFQLIENKYFETAVITMILMSSLALALEDVHLPDRPVMQDILYYMDR 1328
NC_035109_aegypt IFTVIFFLEMLIKWLALGFRVYFTNAWCWLDFIIVMVSLINFVASLCGAGGIQAFKTMRT 1419
NW_004765908_Musca IFTVIFFLEMLIKWLALGFKVYFTNAWCWLDFVIVMLSLINLVAVWSGLNDIAVFRSMRT 1388
NC_035109_aegypt LRALRPLRAMSRMQGMRVVVNALVQAIPSIFNVLLVCLIFWLIFAIMGVQLFAGKYFKCV 1479
NW_004765908_Musca LRALRPLRAVSRWEGMKVVVNALVQAIPSIFNVLLVCLIFWLIFAIMGVQLFAGKYFKCK 1448
NC_035109_aegypt DKNKTTLSHEIIPDVNACVAENYTWENSPMNFDHVGKAYLCLFQVATFKGWIQIMNDAID 1539
NW_004765908_Musca DGNDTVLSHEIIPNRNACKSENYTWENSAMNFDHVGNAYLCLFQVATFKGWIQIMNDAID 1508
1551
1565
NC_035109_aegypt SREVGKQPIRETNIYMYLYFVFFIIFGSFFTLNLFIGVIIDNFNEQKKKAGGSLEMFMTE 1599
NW_004765908_Musca SREVDKQPIRETNIYMYLYFVFFIIFGSFFTLNLFIGVIIDNFNEQKKKAGGSLEMFMTE 1568
1520
1534
NC_035109_aegypt DQKKYYNAMKKMGSKKPLKAIPRPRWRPQAIVFEIVTNKKFDMIIMLFIGFNMLTMTLDH 1659
NW_004765908_Musca DQKKYYNAMKKMGSKKPLKAIPRPRWRPQAIVFEIVTDKKFDIIIMLFIGLNMFTMTLDR 1628
NC_035109_aegypt YKQTDTFSAVLDYLNMIFICIFSSECLMKIFALRYHYFIEPWNLFDFVVVILSILGLVLS 1719
NW_004765908_Musca YDASEAYNNVLDKLNGIFVVIFSGECLLKIFALRYHYFKEPWNLFDVVVVILSILGLVLS 1688
1794
NC_035109_aegypt IFAIFGMSFFMHVKYKSGLDDVYNFKTFGQSMILLFQMSTSAGWDGVLDGIINEDECLPP 1839
NW_004765908_Musca IFAIFGMSFFMHVKEKSGINAVYNFKTFGQSMILLFQMSTSAGWDGVLDAIINEEDCDPP 1808
1763
NC_035109_aegypt DNDKGYPGNCGSATIGITYLLAYLVISFLIVINMYIAVILENYSQATEDVQEGLTDDDYD 1899
NW_004765908_Musca DNDKGYPGNCGSATVGITFLLSYLVISFLIVINMYIAVILENYSQATEDVQEGLTDDDYD 1868
NC_035109_aegypt MYYEIWQQFDPDGTQYIRYDQLSDFLDVLEPPLQIHKPNKYKIISMDIPICRGDMMFCVD 1959
NW_004765908_Musca MYYEIWQQFDPEGTQYIRYDQLSEFLDVLEPPLQIHKPNKYKIISMDMPICRGDMMYCVD 1928
NC_035109_aegypt ILDALTKDFFARKGNPIEETAELGEVQARPDEVGYEPVSSTLWRQREEYCARVIQHAWRK 2019
NW_004765908_Musca ILDALTKDFFARKGNPIEETGEIGEIAARPDTEGYDPVSSTLWRQREEYCAKLIQNAWRR 1988
NC_035109_aegypt HKERQAGGGGGDDTDADACDNDDGDDGGGGAGDGGSAGGGGVT-SPGVGSGSIVGGGTTP 2078
NW_004765908_Musca YKNGPPQEGDEG----EAAGGEDGAEGGEGEGGSGGGGGGGDDGGSATGATAAAAGATSP 2044

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NC_035109_aegypt        GSGGGGSQANLGIVVEHNLSPKESPDGNNDPQGRQTAVLVESDGFVTKNGHRVVIHSRSP  2138
NW_004765908_Musca      SDPDAGEA--DGASVGGPLSPGCV---SGGSNGRQTAVLVESDGFVTKNGHKVVIHSRSP  2099
                        .. ..*.    *  *   ***      ... :******************:********

NC_035109_aegypt        SITSRSADV     2147
NW_004765908_Musca      S--------     2100
                        *
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Figure L. Sequence alignment of the Para protein of *Aedes aegypti* and *Musca domestica*. Kdr mutation sites are red and the respective location is given in boxes above and below the alignment.

City	Pesticides - Product Name	Pesticides - Active Ingredient
Las Cruces	not provided	Etofenprox Deltamethrin Chlorpyrifos Bifenthrin Lambda Cyhalothrin
T or C	Prentox Aqua Perm-X UL 30-30 Altosid XR Briquets Aqualuer 20-20	Permethrin and Piperonyl Butoxide (S)-Methoprene Permethrin and Piperonyl Butoxide Technical
Roswell	no info	no info
Lordsburg	none	n/a
Alamogordo	Vectobac	*Bacillus thuringiensis* subsp. *israelensis*
Clovis	Delta Guard Atrapa	Deltamethrin Malathion
Sunland Park	Altosid products (2015, 2016, 2017) Fyfanon (2016, 2017) Kontrol 4x4 (2015) Vectolex CG products (2013, 2014) Evoluer 30-30 (2013, 2014) Sustain MBG Pellets (2013)	(S)-Methoprene Malathion Permethrin and Piperonyl Butoxide *Bacillus sphaericus* Permethrin and Piperonyl Butoxide *Bacillus thuringiensis* subsp. *israelensis*
Portales	no info	no info
Carlsbad	Mosquito Master Delta Guard Altosid Fourstar BTI Natular™ products Permex Pursuit PyroFos 1.5 ULV (discontinued by the manufacturer)	Chlorpyrifos and Permethrin Deltamethrin (S)-Methoprene *Bacillus thuringiensis* subsp. *Israelensis* Spinosad (soil bacterium) Permethrin Permethrin and Piperonyl Butoxide Chlorpyrifos
Lovington	Mosquito Master BTI Briquits	Chlorpyrifos and Permethrin *Bacillus thuringiensis* subsp. *Israelensis*
Deming	not provided	Etofenprox Deltamethrin Chlorpyrifos Bifenthrin Lambda Cyhalothrin
Socorro	not provided	Permethrin

Table A. Pesticide-use in selected cities across New Mexico.

City	# sites contributing to adults	# adults added to cage
Alamogordo	9	28
Carlsbad	8	144
Deming	6	28
Las Cruces	9	60
Lovington	5	20
Roswell	8	22
Sunland Park	12	72

Table B. Number of founding individuals for New Mexico *Aedes aegypti* strains used in this study. Traps were set for 24 hours at the respective sites.