

Title: **Evaluation of insecticide efficacy and insecticide adaptive response in Italian populations of *Drosophila suzukii***

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Figure S1. Sequencing analysis of <i>Nav</i> gene domains putatively harbouring amino acid replacements associated with the resistant para alleles in <i>D. melanogaster</i> . Left panel: nucleotide and deduced amino acid sequence of the putative sodium channel protein para annotated in <i>D. suzukii</i> genome project (GenBank accession number XM_036821263); primer positions used for cDNA fragment amplifications are highlighted and potentially mutated sites outlined in red colour. Right panel: Sanger sequencing displaying the cDNA sequence at the putative para mutated sites (codons in green colour) in the susceptible (BIO) and resistant (QUA) populations.....	3-6

Table S1. Primers used for quantitative and end point RT-PCR analysis.

RT-qPCR (gene expression)					
Gene	Accession number	Primer sequences (5' to 3') ^a	PCR size (bp)	Ta (°C)	Reference
<i>RyR</i>	XM_017087623	RyR-F1: GACGAGGAGGTGGACAAGAA RyR-R1: TGTCGAAAATGATGCGGTAG	150	60	present paper
<i>Cyp12d1</i>	XM_017072196 XM_017072366 XM_017072565	Cyp12d1-F: ATCAATCCMATTTTCATGCAACC Cyp12d1-R: TTGTCGATCGAAKGCCACCA	193	60	present paper
Arginine kinase	DS10_00003811	AK-F: CTACCACAACGATGCCAAGA AK-R: AAGGTCAGGAAGCCGAGA	189	60	Zhai <i>et al.</i> , 2014
TATA binding protein	DS10_00003466	TBP-F: CCACGGTGAATCTGTGCT TBP-R: GGAGTCGTCCTCGCTCTT	182	60	Zhai <i>et al.</i> , 2014
α -Tubulin	DS10_00003884	TUB-F: AGGATGCGGCGAATAACT TUB-R: CGGTGGATAGTCGCTCAA	189	60	Zhai <i>et al.</i> , 2014
RT-PCR (gene sequencing)					
Gene	Accession number	Primer sequences (5' to 3') ^b	PCR size (bp)	Ta (°C)	Reference
<i>RyR</i>	XM_017087623	RyR-F2: GCTCTTCTACAAAGTCACCTCTT RyR-R2: TCCTCGTCCTCTTCCTGAAT	876	58	present paper
<i>Nav</i>	XM_036821263	Nav-F1: GTTGAGTCCACTGAGGTGATATT Nav-R1: CCGAGTACCAATTGGAGCTATT	463	58	present paper
		Nav-F2: CGTGGCGCTATCCCTATTG Nav-R2: AAATCGGCCAATTCGATTAAGG	544		
		Nav-F3: GTATCGCTTATCAACTTCGTTGC Nav-R3: AACATTTCTAATGATCCACCTGC	602		

Accessions number with prefix XM_ are from GenBank database (www.ncbi.nlm.nih.gov/genbank), accessions with prefix DS10_ are from Spotted Wing Fly Base (<http://spottedwingflybase.oregonstate.edu>); ^a F and R refer to forward and reverse primers, respectively.

DsNav-F1 ->

1501 gttgagtccactgaggtgatatcaccggaatctacacattgaatcagctgttaaagtg 1560
 167 V E S T E V I F T G I Y T F E S A V K V 186

1561 atggcacgaggtttcattttatgcccgtttacgtatccttagagatgcatggaattggctg 1620
 187 M A R G F I L C P F T Y L R D A W N W L 206

1621 gacttcgtagtaatagctttagcttagtgaccatgggtatagatttaggtaaatctagca 1680
 207 D F V V I A L A Y V T M G I D L G N L A 226

1681 gccctgcgaacgtttagggtgctgcgagcgcttaaaccgtagccattgtgccaggcttg 1740
 227 A L R T F R V L R A L K T V A I V P G L 246

para^{TS1}, para^{TS2}

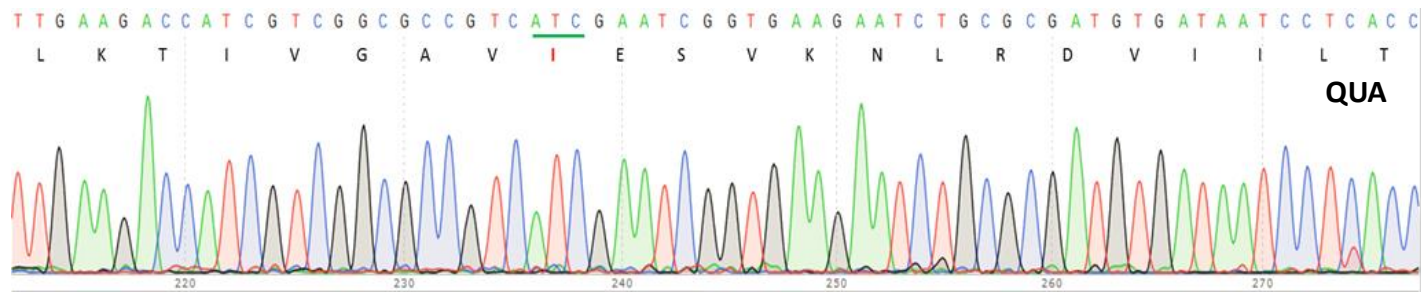
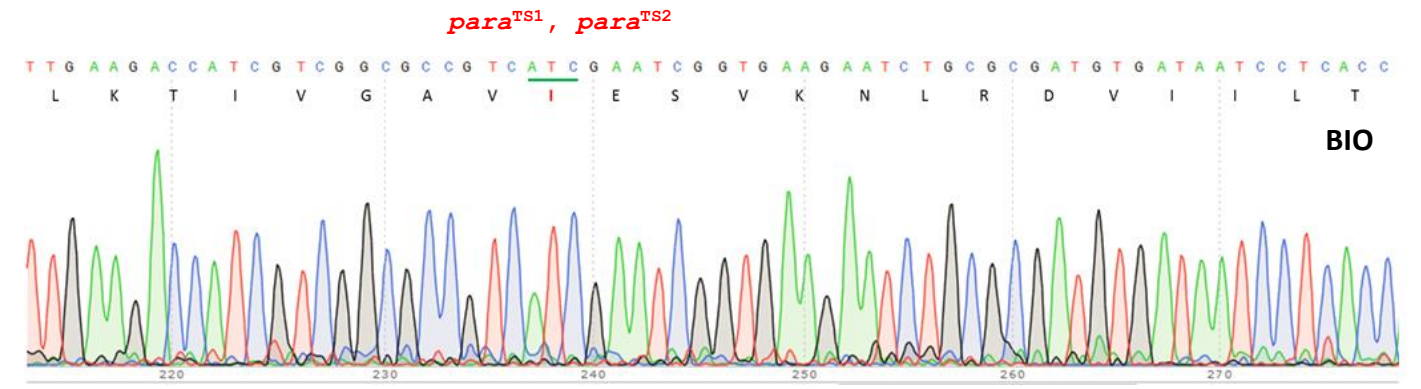
1741 aagaccatcgctgcggccgctc**atc**gaatcggtgaagaatctgcgcatgtgataatcctc 1800
 247 K T I V G A V **I** E S V K N L R D V I I L 266

1801 accatggtctccctatcggtcttcgctgatggcctgcagatctacatggcgctgctc 1860
 267 T M F S L S V F A L M G L Q I Y M G V L 286

1861 acgcagaagtgcacaaagttcccgtggacggctcctggggcaatctgaccgacgag 1920
 287 T Q K C I K K F P L D G S W G N L T D E 306

<- DsNav-R1

1921 aactgggactatcacaatcgc**aatagctccaattggtactcgg**agacgagggcatctca 1980
 307 N W D Y H N R N S S N W Y S E D E G I S 326



DsNavF2 ->

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 847 Q E G W N I F D F I I V A L S L L E L G 866

3601 ctcgagggtgtccaaggcctgtccgtcttgcgttcggttcgattgctgcgtgtatttaa 3660
 867 L E G V Q G L S V L R S F R L L R V F K 886

M918L (super-kdr)

3661 ttggccaagtcttggccaacacttaatttactcatttcgattatgggacgcaccatgggc 3720
 887 L A K S W P T L N L L I S I M G R T M G 906

3721 gctttgggtaactctgacatttgcattatcatcttcatcttgcggtgatggga 3780
 907 A L G N L T F V L C I I I F I F A V M G 926

3781 atgcaactgttcgaaagaattatcatgatcacaaggaccgcttcccggatggcgatctg 3840
 927 M Q L F G K N Y H D H K D R F P D G D L 946

3841 ccgcgctggaacttcaccgactttatgcacagcttcatgatcgtgttccgggtgctctgt 3900
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L1014F (kdr)

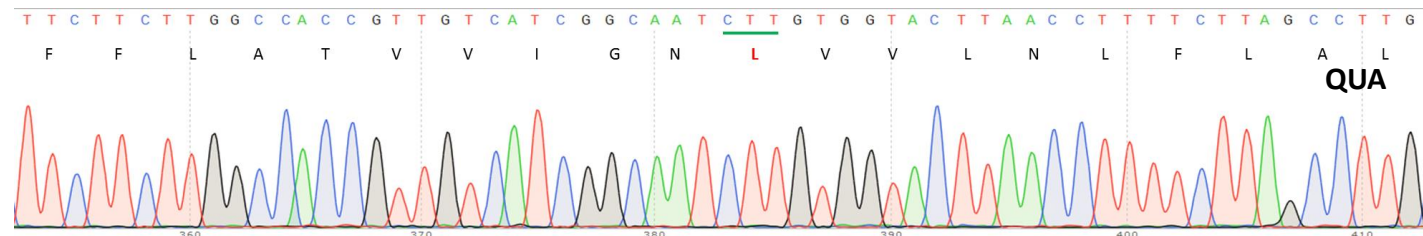
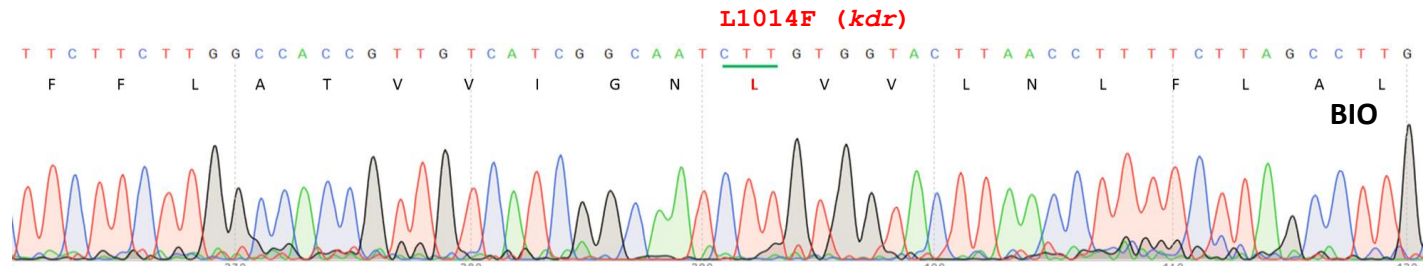
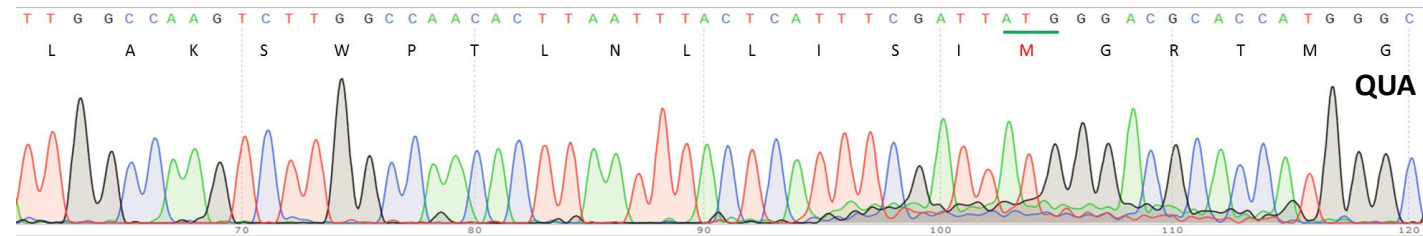
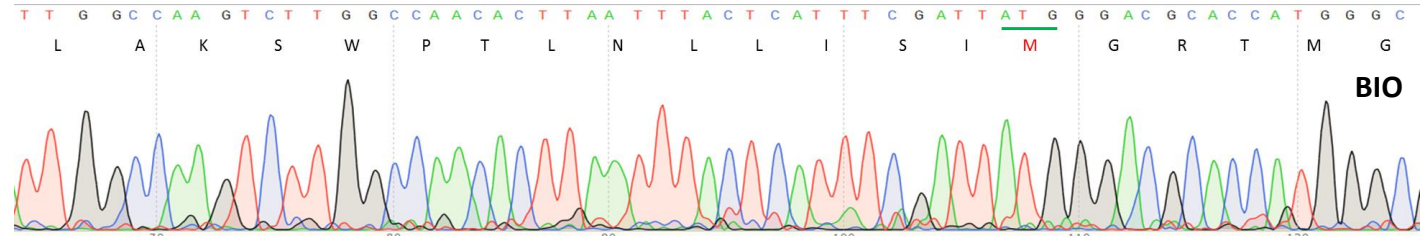
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 967 G E W I E S M W D C M Y V G D V S C I P 986

3961 ttcttcttggccaccggttgcacggcaatccttgggtacttaaccttttcttagccttg 4020
 987 F F L A T V V I G N L V V L N L F L A L 1006

<- DsNavR2

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 1027 K I A E A F N R I G R F K S W V K R N V 1046

M918L (super-kdr)



DsNavF3 ->

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1307 Y F T N A W C W L D F V I V M V S L I N 1326

4981 ttcggtgcttcacttggtgagctgggtgttattcaagccttcaagactatgcaacgcta 5040
1327 F V A S L V G A G G I Q A F K T M R T L 1346

5041 agagcactgagaccactacgtgccatgtcccgtatgcagggcatgagggctcgtcgttaat 5100
1347 R A L R P L R A M S R M Q G M R V V V N 1366

para^{DN7}

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1367 A L V Q A I P S I F N V L L V C L I F W 1386

5161 ctaatttttgcataatgggtgtacagctttttgctggaaaatattttaagtgcgaggac 5220
1387 L I F A I M G V Q L F A G K Y F K C E D 1406

5221 atgaacggcacgaagctcagccacgagatcataccaaatcgcaatgcctgcgagagcgag 5280
1407 M N G T K L S H E I I P N R N A C E S E 1426

5281 aactacacgtgggtgaattcagcaatgaatttcgatcatgtaggtaacgcgtatctgtgc 5340
1427 N Y T W V N S A M N F D H V G N A Y L C 1446

para^{DN43}, *para*^{DTs2}

5341 cttttccaagtggccaccttcaaaggctggatacaaatcatgaacgatgctatcgattca 5400
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*para*⁷⁴

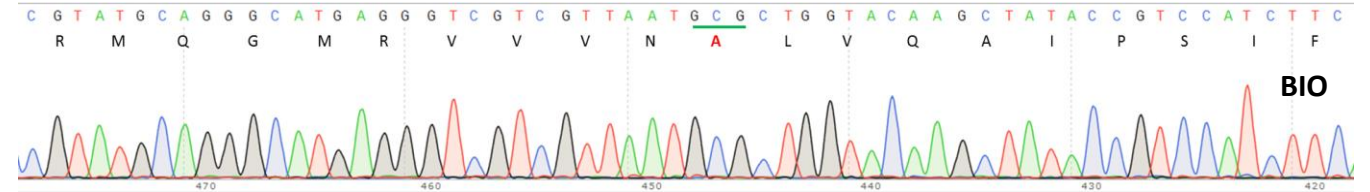
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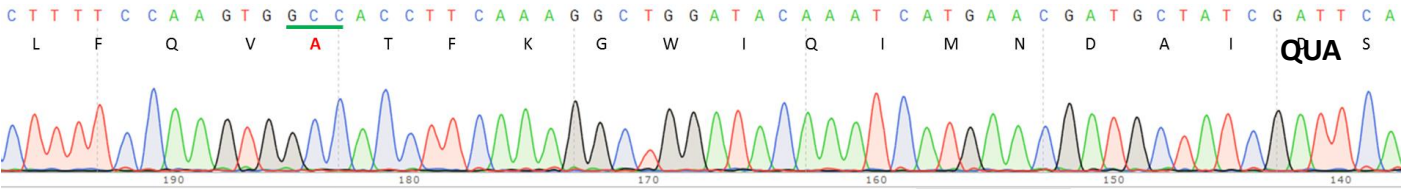
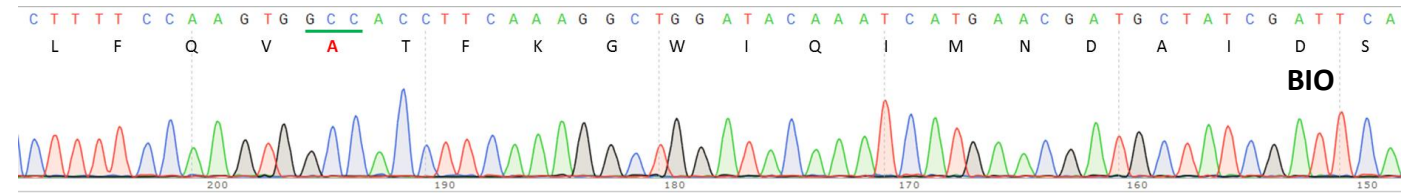
<- DsNavR3

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1507 N F N E Q K K K A G G S L E M F M T E D

para^{DN7}



para^{DN43}, *para*^{DTs2}



DsNavF3 ->

4921 tacttcaccaacgcggtggtgttgctcgattttgtgattgtcatggtatcgcttatcaac 4980
1307 Y F T N A W C W L D F V I V M V S L I N 1326

4981 ttcggtgcttcacttgttgagctggtggtattcaagccttcaagactatgcaacggtta 5040
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para^{DN7}

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1367 A L V Q A I P S I F N V L L V C L I F W 1386

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1387 L I F A I M G V Q L F A G K Y F K C E D 1406

5221 atgaacggcacaagctcagccacagatcatatacacaatcgcaatgctgagagcgag 5280
1407 M N G T K L S H E I I P N R N A C E S E 1426

5281 aactacacgtgggtgaattcagcaatgaatttcgatcatgtagtaacgcgtatctgtgc 5340
1427 N Y T W V N S A M N F D H V G N A Y L C 1446

para^{DN43}, para^{BTs2}

5341 cttttccaagtgccaccttcaaaggctggatacaaatcatgaacgatgctatcgattca 5400
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para⁷⁴

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5461 ttcttcatcatatttgatcattttcacactcaatctgttcattggtgttatcattgat 5520
1487 F F I I F G S F F T L N L F I G V I I D 1506

<- DsNavR3

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1507 N F N E Q K K K A G G S L E M F M T E D

