

Additional file 2: Genotypic and allelic frequencies and association tests.

A: bendiocarb; *An. gambiae s.s.*

| Locality | Dead | | | Live | | | Sample size |
|-------------|------|----|-----|------|----|----|-------------|
| | SS | GS | GG | SS | GS | GG | |
| Huni Valley | 1 | 3 | 22 | 0 | 1 | 0 | 27 |
| Tarkwa | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Axim | 0 | 8 | 14 | 0 | 1 | 0 | 23 |
| Takoradi | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shama | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Komenda | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| Cape Coast | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Twifo Praso | 0 | 4 | 27 | 0 | 0 | 1 | 32 |
| Assin Faso | 0 | 6 | 31 | 0 | 2 | 1 | 40 |
| Swedru | 0 | 2 | 11 | 0 | 4 | 0 | 17 |
| Madina | 0 | 1 | 10 | 4 | 8 | 0 | 23 |
| Ashaiman | 2 | 1 | 0 | 8 | 1 | 0 | 12 |
| Dodowa | 0 | 4 | 7 | 1 | 12 | 0 | 24 |
| Koforidua | 0 | 2 | 9 | 3 | 8 | 1 | 23 |
| Akim Oda | 0 | 1 | 17 | 0 | 5 | 0 | 23 |
| Somanya | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Akatsi | 0 | 3 | 15 | 0 | 4 | 0 | 22 |
| Keta | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 3 | 36 | 166 | 16 | 46 | 3 | 270 |

Genotypic chi-square test for bendiocarb *An. gambiae s.s.*

| | SS | GS | GG |
|-------------|-----------|-----------|------------|
| Dead | 3 | 36 | 166 |
| Live | 16 | 46 | 3 |

$$X^2 = 129.57, df = 2, P < 0.0001$$

Allelic chi-square test for bendiocarb *An. gambiae s.s.*

| | S | G |
|-------------|-----------|------------|
| Dead | 42 | 368 |
| Live | 78 | 52 |

$$X^2 = 141.38, df = 1, P < 0.0001$$

Odds ratio (OR) = 13.14 (95% C.I. 8.18-21.21)

B: bendiocarb; *An. coluzzii*

| Locality | Dead | | Live | | | Sample size | |
|--------------|----------|-----------|------------|----------|----------|-------------|------------|
| | SS | GS | SS | SS | GS | | GG |
| Huni Valley | 0 | 0 | 29 | 0 | 0 | 0 | 29 |
| Tarkwa | 0 | 0 | 23 | 0 | 0 | 0 | 23 |
| Axim | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Takoradi | 0 | 1 | 20 | 0 | 0 | 3 | 24 |
| Shama | 0 | 1 | 22 | 0 | 0 | 0 | 23 |
| Komenda | 0 | 0 | 21 | 0 | 0 | 1 | 22 |
| Cape Coast | 0 | 0 | 15 | 0 | 3 | 6 | 24 |
| Twifo Praso | 0 | 0 | 22 | 0 | 0 | 2 | 24 |
| Assin Faso | 0 | 2 | 14 | 0 | 0 | 0 | 16 |
| Swedru | 0 | 0 | 7 | 0 | 0 | 0 | 7 |
| Madina | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Ashiaman | 0 | 6 | 3 | 1 | 2 | 0 | 12 |
| Dodowa | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Koforidua | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Akim Oda | 0 | 1 | 23 | 0 | 0 | 1 | 25 |
| Akatsi | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| Keta | 0 | 0 | 32 | 0 | 3 | 1 | 36 |
| Total | 0 | 12 | 235 | 1 | 8 | 14 | 270 |

Genotypic chi-square test for bendiocarb *An. coluzzii*

| | SS | GS | GG |
|-------------|----------|-----------|------------|
| Dead | 0 | 12 | 235 |
| Live | 1 | 8 | 14 |

$X^2 = 38.86$, $df = 2$, $P < 0.0001$

Allelic chi-square test for bendiocarb *An. coluzzii*

| | S | G |
|-------------|-----------|------------|
| Dead | 12 | 482 |
| Live | 10 | 36 |

$X^2 = 35.36$, $df = 1$, $P < 0.0001$

OR (95% C.I.)= 11.16 (4.51-27.58)

C: fenitrothion; *An. gambiae s.s.*

| Locality | Dead | | | Live | | | Sample size |
|-------------|------|----|----|------|----|----|-------------|
| | SS | GS | GG | SS | GS | GG | |
| Tarkwa | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Twifo Praso | 1 | 2 | 15 | 0 | 0 | 0 | 18 |
| Assin Faso | 0 | 2 | 13 | 0 | 0 | 0 | 15 |
| Swedru | 0 | 2 | 33 | 0 | 3 | 0 | 38 |
| Ashiaman | 0 | 2 | 0 | 13 | 0 | 0 | 15 |
| Dodowa | 0 | 3 | 3 | 2 | 13 | 0 | 21 |
| Somanya | 3 | 5 | 14 | 0 | 0 | 0 | 22 |
| Akatsi | 0 | 4 | 16 | 0 | 0 | 0 | 20 |
| Total | 4 | 20 | 95 | 15 | 16 | 0 | 150 |

Genotypic chi-square test for fenitrothion *An. gambiae s.s.*

| | SS | GS | GG |
|-------------|-----------|-----------|-----------|
| Dead | 4 | 20 | 95 |
| Live | 15 | 16 | 0 |

$X^2 = 76.52$, $df = 2$, $P < 0.0001$

Allelic chi-square test for fenitrothion *An. gambiae s.s.*

| | S | G |
|-------------|-----------|------------|
| Dead | 28 | 210 |
| Live | 46 | 16 |

$X^2 = 103.16$, $df = 1$, $P < 0.0001$

OR (95% C.I.) = 21.56 (10.79-43.08)

D: fenitrothion; *An. coluzzii*

| Locality | Dead | | | Live | | | Sample size |
|-------------|------|----|----|------|----|----|-------------|
| | SS | GS | GG | SS | GS | GG | |
| Tarkwa | 0 | 0 | 23 | 0 | 0 | 0 | 23 |
| Takoradi | 0 | 0 | 24 | 0 | 0 | 0 | 24 |
| Twifo Praso | 0 | 0 | 6 | 0 | 0 | 0 | 6 |
| Assin Faso | 0 | 0 | 9 | 0 | 0 | 0 | 9 |
| Swedru | 0 | 0 | 17 | 0 | 0 | 0 | 17 |
| Ashiaman | 0 | 2 | 4 | 0 | 3 | 0 | 9 |
| Dodowa | 0 | 1 | 1 | 0 | 1 | 0 | 3 |
| Somanya | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Akatsi | 0 | 1 | 3 | 0 | 0 | 0 | 4 |
| Total | 0 | 6 | 87 | 0 | 4 | 0 | 97 |

Genotypic test for fenitrothion *An. coluzzii*

| | SS | GS | GG |
|-------------|----------|----------|-----------|
| Dead | 0 | 6 | 87 |
| Live | 0 | 4 | 0 |

P < 0.0001, fisher exact test used owing to low expected frequencies
(<http://www.vassarstats.net/fisher2x3.html>)

Allelic chi-square test for fenitrothion *An. coluzzii*

| | S | G |
|-------------|----------|------------|
| Dead | 6 | 180 |
| Live | 4 | 5 |

$\chi^2 = 22.10$, $df = 1$, $P < 0.0001$

OR (95% C.I.) = 30.0 (6.02-149.63)