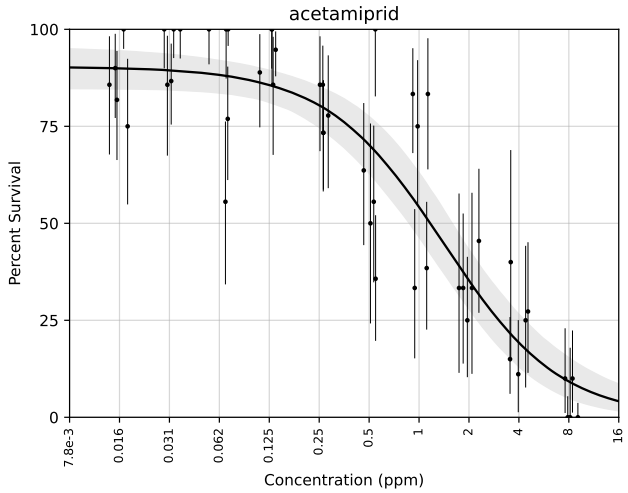
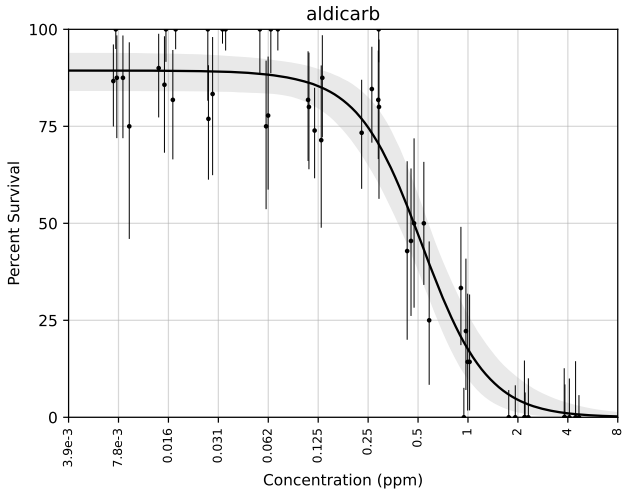
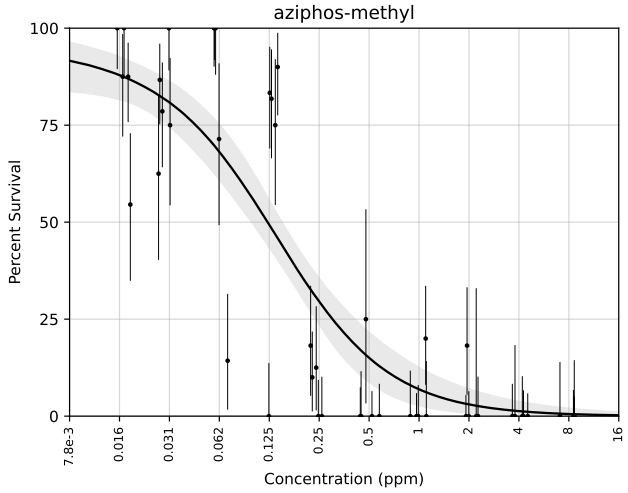


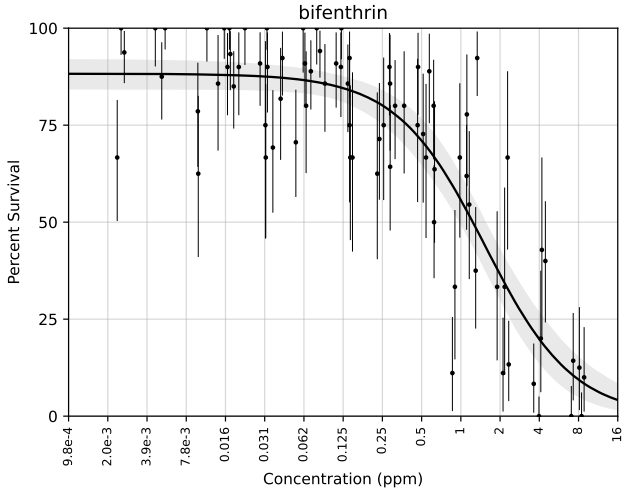

**Acetamiprid** $LC_{50}$: 1.39 ppm [0.992, 1.91]
4 biol. reps; 5 tech. reps; $R^2$: 0.82



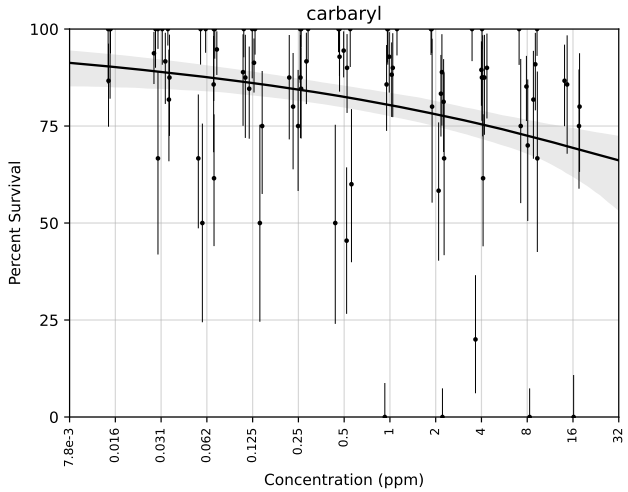

**Aldicarb** $LC_{50}$: 0.526 ppm [0.424, 0.645]
4 biol. reps; 5 tech. reps; $R^2$: 0.941



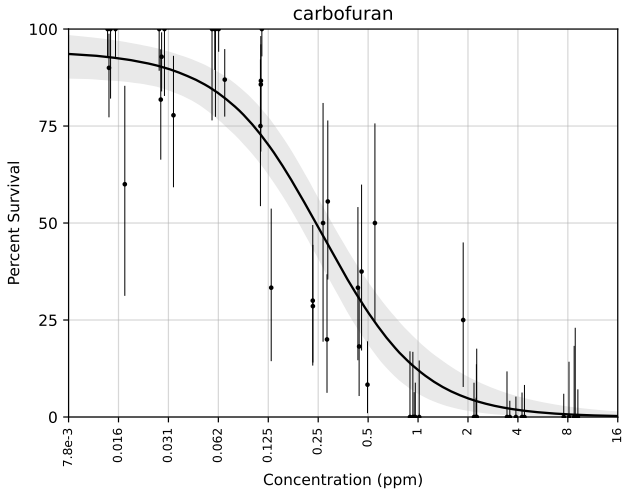

**Aziphos-methyl** $LC_{50}$: 0.134 ppm [0.101, 0.176]
4 biol. reps; 5 tech. reps; $R^2$: 0.763



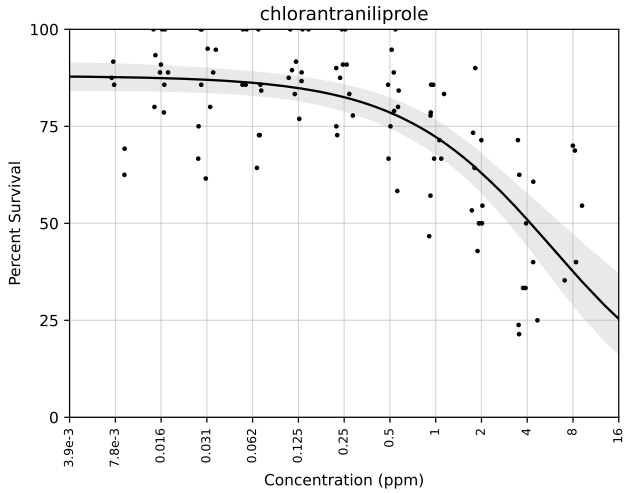

**Bifenthrin** $LC_{50}$: 1.52 ppm [1.2, 1.94]
7 biol. reps; 8 tech. reps; $R^2$: 0.764



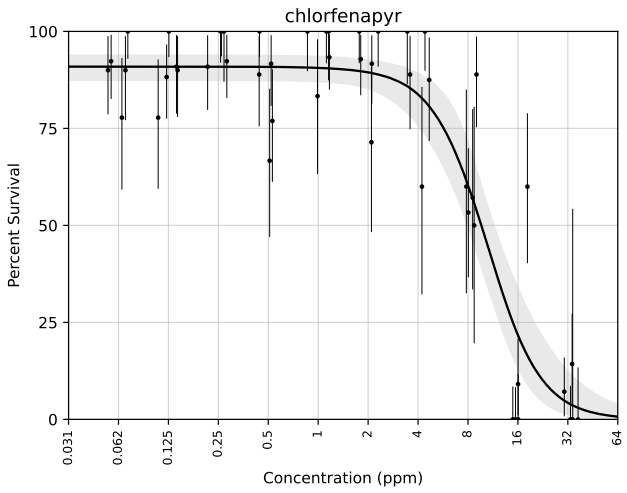

**Carbaryl** $LC_{50}$: 778 ppm [42, 2.29e4]
8 biol. reps; 9 tech. reps; $R^2$: 0.0779



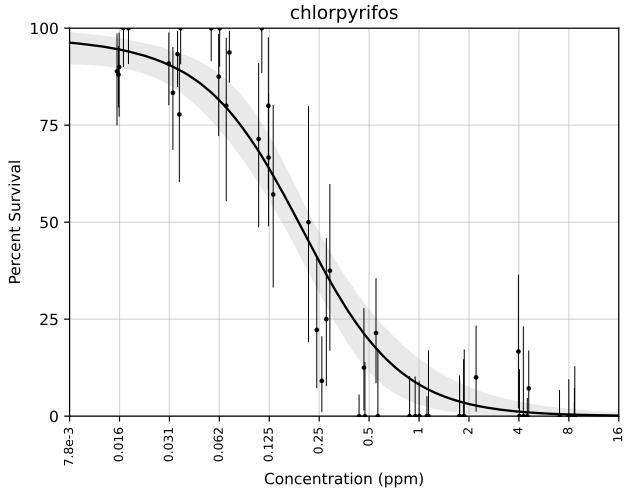

**Carbofuran** $LC_{50}$: 0.263 ppm [0.203, 0.335]
4 biol. reps; 5 tech. reps; $R^2$: 0.888



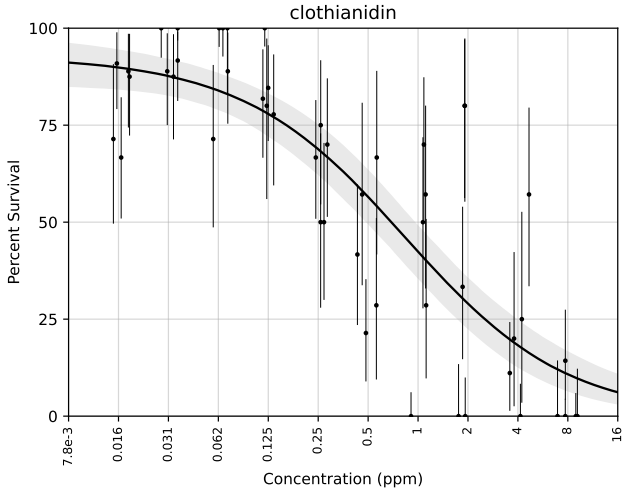

**Chlorantraniliprole** $LC_{50}$: 5.75 ppm [3.86, 9.2]
9 biol. reps; 10 tech. reps; $R^2$: 0.541



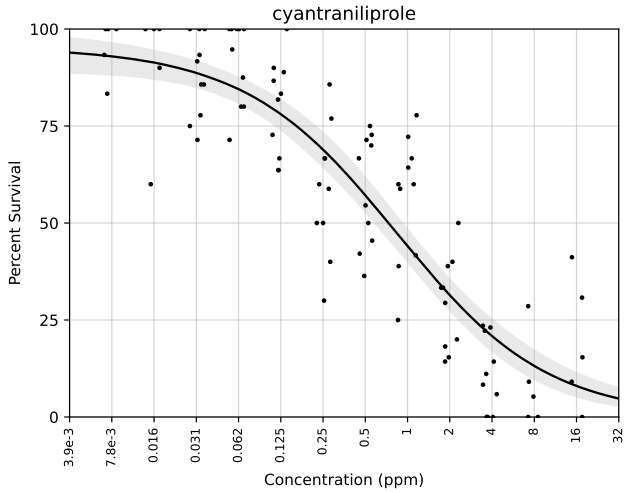

**Chlorfenapyr** $LC_{50}$: 10.4 ppm [8.63, 12.6]
4 biol. reps; 5 tech. reps; $R^2$: 0.869



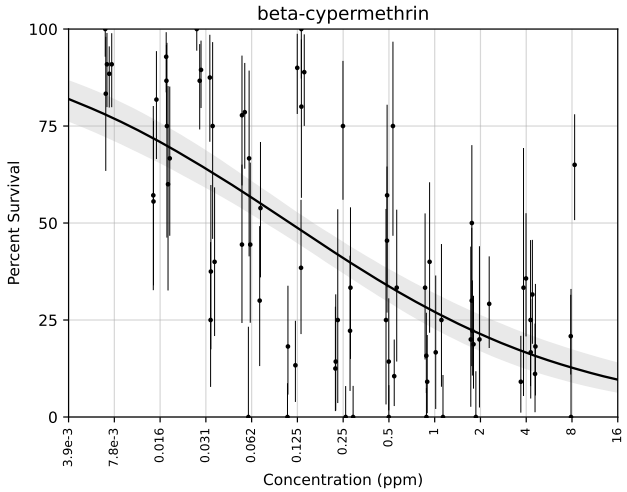

**Chlorpyrifos** $LC_{50}$: 0.196 ppm [0.154, 0.243]
4 biol. reps; 5 tech. reps; $R^2$: 0.923



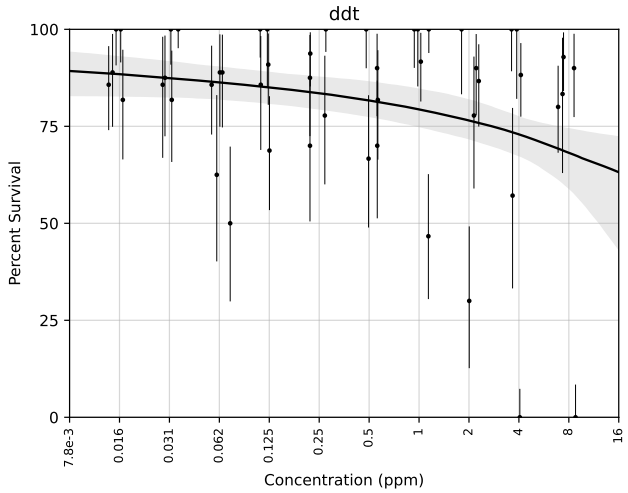

**Clothianidin** $LC_{50}$: 0.824 ppm [0.543, 1.23]
4 biol. reps; 5 tech. reps; $R^2$: 0.693



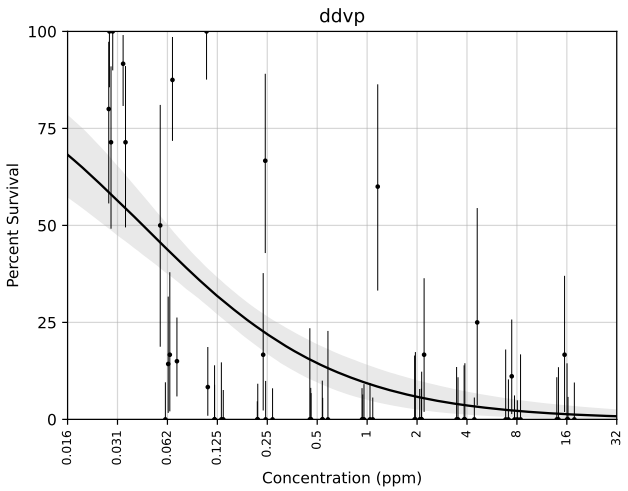

**Cyantraniliprole** $LC_{50}$: 0.828 ppm [0.613, 1.13]
9 biol. reps; 10 tech. reps; $R^2$: 0.801



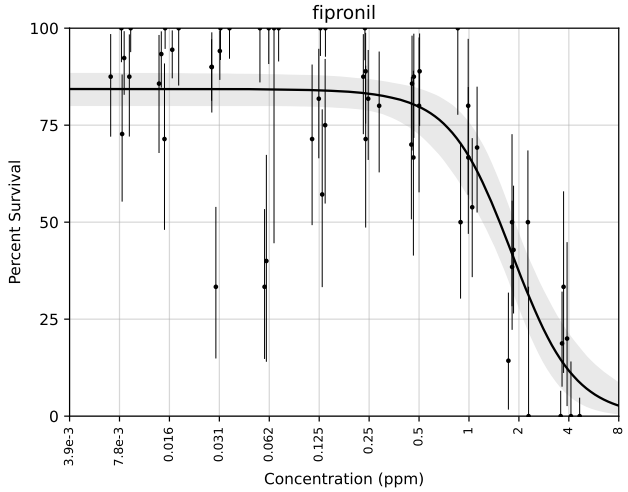

**$\beta$-Cypermethrin** $LC_{50}$: 0.112 ppm [0.0777, 0.157]
7 biol. reps; 8 tech. reps; $R^2$: 0.437



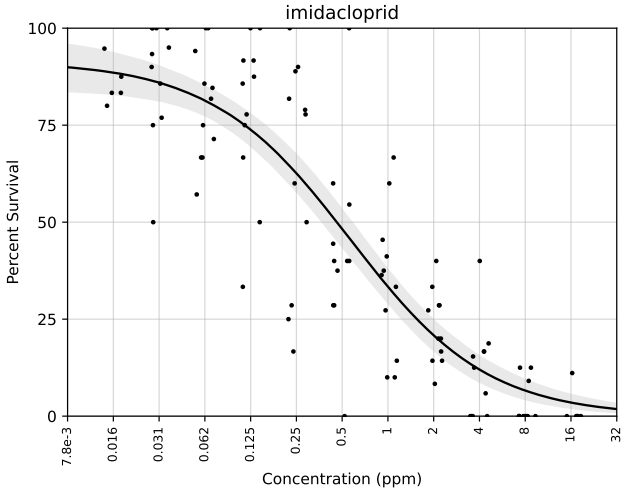

**DDT** $LC_{50}$: 117 ppm [10.2, 9.12e3]
4 biol. reps; 5 tech. reps; $R^2$: 0.0807



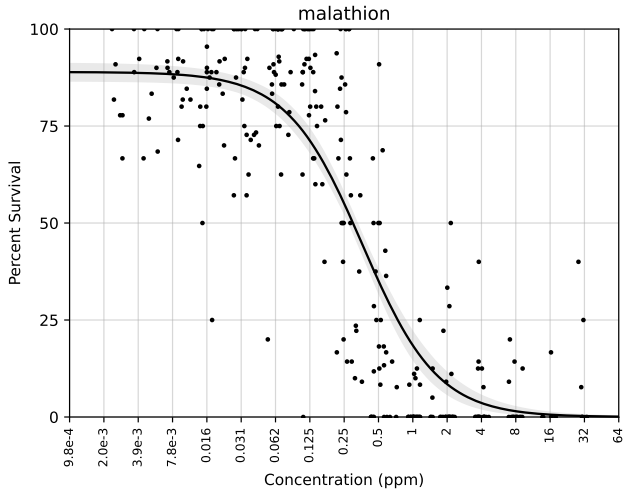

**DDVP** $LC_{50}$: 0.0445 ppm [0.0282, 0.065]
5 biol. reps; 6 tech. reps; $R^2$: 0.469



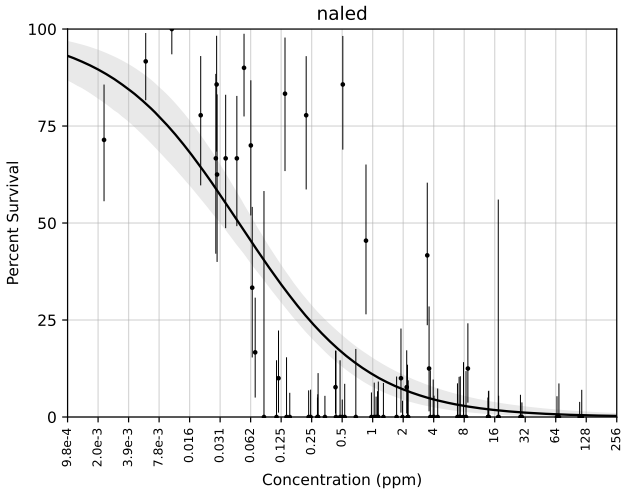

**Fipronil** $LC_{50}$: 1.8 ppm [1.48, 2.23]
5 biol. reps; 6 tech. reps; $R^2$: 0.676



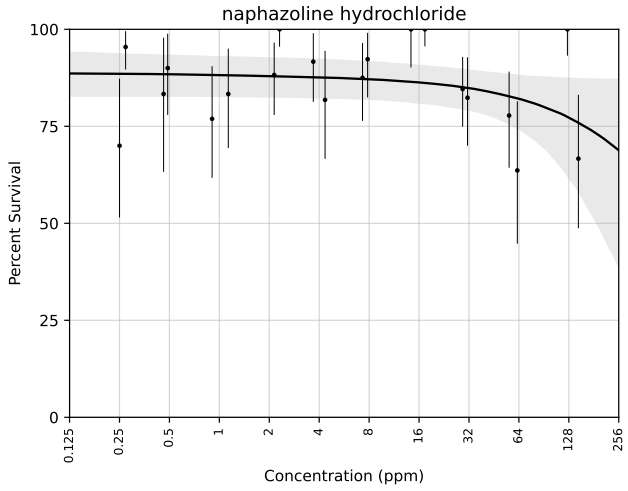

**Imidacloprid** $LC_{50}$: 0.562 ppm [0.403, 0.786]
9 biol. reps; 11 tech. reps; $R^2$: 0.776



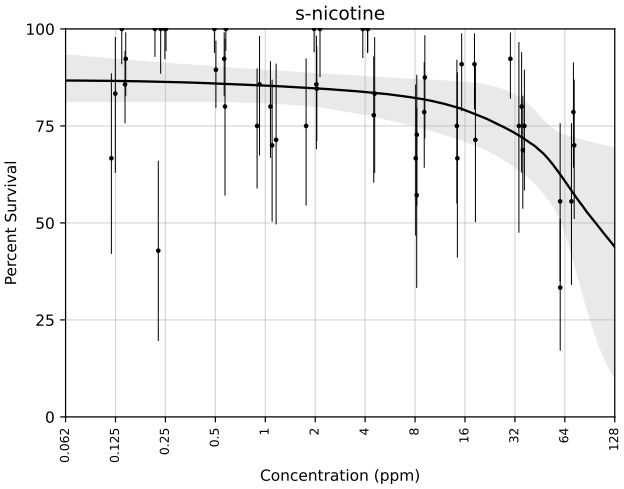

**Malathion** $LC_{50}$: 0.362 ppm [0.33, 0.396]
16 biol. reps; 31 tech. reps; $R^2$: 0.789



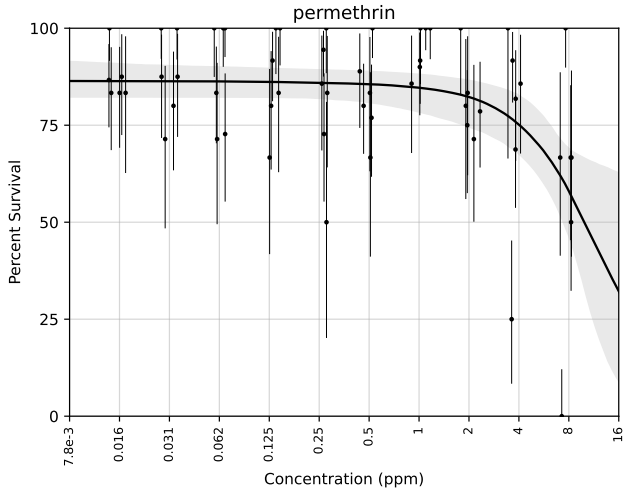

**Naled** $LC_{50}$: 0.0486 ppm [0.0321, 0.0718]
7 biol. reps; 7 tech. reps; $R^2$: 0.566



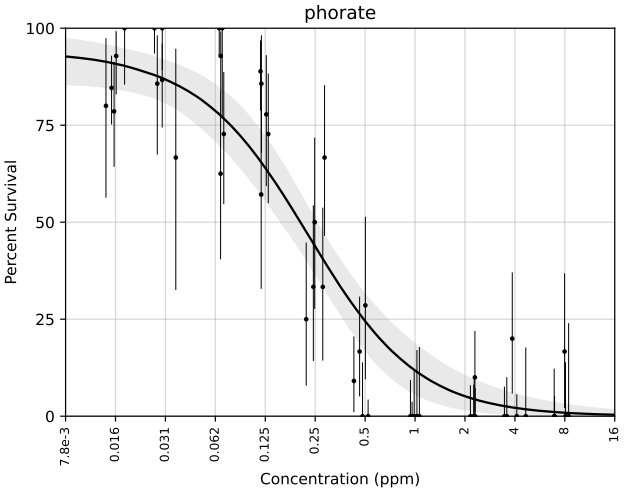

**Naphazoline hydrochloride** $LC_{50}$: 1.02e3 ppm [74.1, 3.07e17]
2 biol. reps; 2 tech. reps; $R^2$: 0.0569



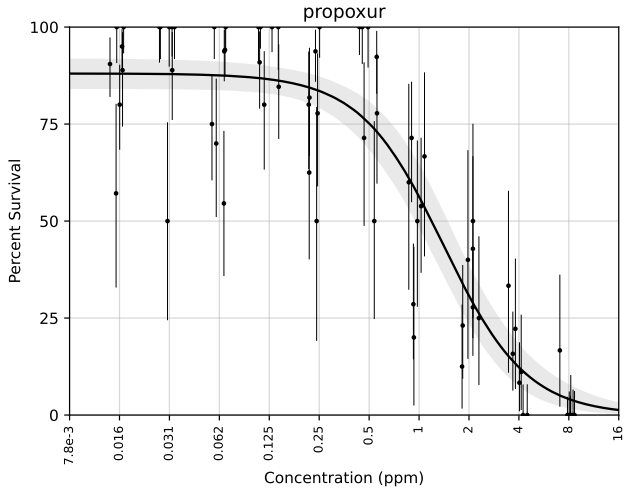

***S*-nicotine** $LC_{50}$: 129 ppm [52, 4.05e3]
4 biol. reps; 5 tech. reps; $R^2$: 0.272



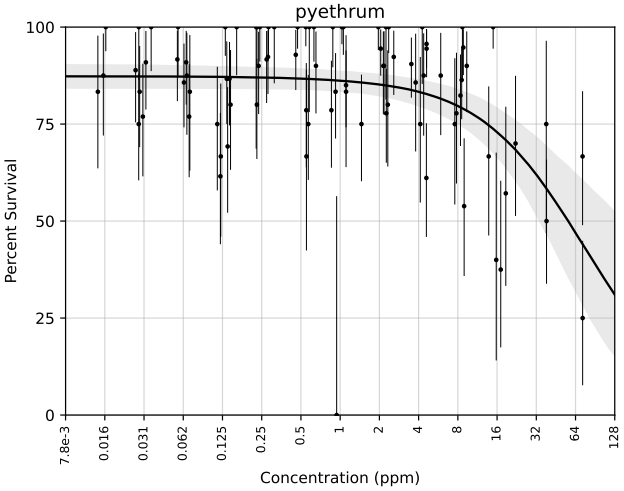

**Permethrin** $LC_{50}$: 11.9 ppm [7.42, 36.3]
5 biol. reps; 6 tech. reps; $R^2$: 0.225




**Phorate** $LC_{50}$: 0.225 ppm [0.165, 0.295]
4 biol. reps; 5 tech. reps; $R^2$: 0.897




**Propoxur** $LC_{50}$: 1.39 ppm [1.12, 1.74]
6 biol. reps; 7 tech. reps; $R^2$: 0.824




**Pyethrum** $LC_{50}$: 74.1 ppm [38.5, 189]
8 biol. reps; 9 tech. reps; $R^2$: 0.226

Data analysis was performed using the statistics module for the Merlin Data Analysis program. Live/dead counts from the bioassay were used to generate new survival probabilities using a Beta prior. The user-specified prior is Heldane's prior, the improper prior Beta$(0, 0)$, (set by `BETA_PRIOR`) and 3840 bootstrap iterations were used (set by `BOOTSTRAP_ITERS`).When either the live count or dead count was equal to 0, the prior the distribution Beta$(0.25, 0.25)$ (set by `BETA_PRIOR_0`) was used to avoid the sunrise problem. Correlation between wells in a replicate was modelled by generating multivariate normal random variables with correlation $\rho = 0.1$ (set by `RHO`), which were then converted to quantiles, and then back-converted to probabilities in the appropriate beta distribution.

Each iteration of bootstrapped dose-response data was fit to the curve

$$\theta_i = \frac{b_2}{(1 + \exp(b_0 + b_1 x_i))}$$

by maximizing the log-likelihood function, *i.e.*, solving

$$\underset{\boldsymbol{b}=(b_0,b_1,b_2)}{\operatorname{argmax}} \left( f(\boldsymbol{b}) + \sum_{i=1}^{n} (1 - \theta_i) \ln(1 + \xi_i - b_2) + \sum_{i=1}^{n} \theta_i \ln b_2 - \sum_{i=1}^{n} \ln(1 + \xi_i) \right)$$

where

$$f(\boldsymbol{b}) = \frac{-\left(b_0^2 + b_1^2\right)}{2\sigma^2} + (\alpha - 1) \ln b_2 + (\beta - 1) \ln(1 - b_2)$$

and

$$\xi_i = e^{b_0 + b_1 x_i}.$$

Priors on parameters were $(b_0, b_1) \sim \mathcal{N}(\mathbf{0}, \sigma I_2)$and $b_2 \sim \text{Beta}(\alpha, \beta)$, where $\sigma = 1000.0$, $\alpha = 1.5$, and $\beta = 1.001$, as defined by `LL_SIGMA`, `LL_BETA1`, and `LL_BETA2` in the `analysis_config.txt` file, respectively. Optimization of the log-likelihood function was performed using the optimized vector Broyden-Fletcher-Goldfarb-Shanno (BFGS) algorithm using a C interface to the GNU Scientific Library.

Credible intervals for the data points are shown at the 80% level when fewer than 10 replicates are used. The best-fit line is calculated as the median value of all fitted curves at a given concentration. The error region for the curve respresents a 95% confidence region, as determined by quantiles of predicted survivals at each concentration.