Matrix of selected mosquito strains

The matrix of selected mosquito strains (MSMS) contains the species, strains and relevant characteristics, for example, insecticide resistance status and intensity, of the laboratory strains used in free-flight studies and the local vector populations at semi-field study sites.

1. Introduction

The applicant must submit the names and characteristics of mosquito species and strains used in free-flight room studies, and of the local vector populations at semi-field sites so that this information can be reviewed as part of the WHO prequalification assessment of vector control products.

The available form/template and guidance information have been developed to support the selection and reporting of mosquito strains.

For spatial emanator products, the MSMS is used to clearly convey the characteristics of mosquito species and strains used to investigate the performance of the spatial emanator product and the characteristics of the local vector populations at semi-field sites as they relate to the intended effect of the product.

Submit a single MSMS per product dossier that collates the required information from all sites.

2. Matrix of selected mosquito strains

2.1. Instructions

All red text should be deleted from the MSMS prior to submission.

Text in [square brackets] should be replaced by appropriate descriptive language.

Lines/columns may be added to the tables if more space is needed to include all mosquito strains used in free-flight room studies and/or local populations at semi-field sites.

Company: Name of the responsible owner of the prequalified or proposed product.

Product name: Name of the prequalified or proposed product.

PQ Ref #: PQT/VCP assigned reference number; if not yet assigned, leave blank.

Product intended effect: Describe the intended effect of the product as it relates to the intended entomological impact on the target vector population.

2.2. Section A. Active ingredient(s) (AIs) mode of action, intended effect and target vector characteristics

2.2.1. Table A1. AI(s) (including synergists) and mode of action

- State the name(s) of the AI(s), that is, those ingredient(s) intended to induce an effect in a vector and the concentration in the spatial emanator product.
- State the entomological mode of action for each AI (and/or synergist).
- Describe the intended effect on the target vector population(s). Each AI may have one or more effects.
- List the species and/or strain characteristics that are targeted by the intended effect.

2.3. Section B. Definition of strains used in free-flight room studies

2.3.1. Table B1. Definition of strains

- State the species, strain name and relevant vector characteristics, for example, carriage of metabolic resistance mechanisms, for each strain used in flight room studies.

2.3.2. Table B2. Strain characterisation – phenotypic insecticide resistance status

- List the most recent results of phenotypic resistance testing carried out for each strain. Resistance testing should be conducted at least once every six months for laboratory strains.
- Complete the method, for example, WHO cylinder test or WHO bottle bioassay, the insecticide(s), the dose and the selected endpoint for each test. Tests should be conducted according to the methods in the *Manual for monitoring insecticide resistance in mosquito vectors and selecting appropriate interventions (1)*.
- Results from any genotypic resistance characterizations that have been conducted should be appended to the MSMS.

2.3.3. Table B3. Strain characterization – insecticide resistance intensity

The resistance intensity of all insecticide-resistant strains must be characterized to aid in the interpretation of results. Complete Table B3 for each strain for which the resistance intensity has been measured.

2.4. Section C. Definition of local vector species at semi-field sites

2.4.1. Table C1. Definition of species

- State the semi-field site name and location, the mosquito species, the vector characteristics expected to be impacted by the product and the proportion present of the species in the local vector population, for example, 50:50 ratio of *An. arabiensis* and *An. funestus*.
- If the composition of the vector population at the semi-field site comprises multiple vector species, for example, *An. gambiae s.l.* and *An. funestus*, and the intention is to analyse the results from both species in the semi-field data analysis, complete one row per species.

2.4.2. Table C2. Species characterization – phenotypic insecticide resistance status

- List the most recent results of phenotypic resistance testing carried out for each species. Resistance testing should be conducted before the semi-field study.
- Complete the method, for example, WHO cylinder test or WHO bottle bioassay, the insecticide(s), the dose and the selected endpoint for each test.
- Results from any genotypic resistance characterizations that have been conducted should be appended to the MSMS.

2.4.3. Table C3. Species characterization – insecticide resistance intensity

The resistance intensity of all insecticide-resistant species must be characterized to aid in the interpretation of results. Complete Table C3 for each target vector species for which the resistance intensity has been measured.

3. Related documents

- WHO PQT/VCP Matrix of selected mosquito strains – Template

4. References

1. Manual for monitoring insecticide resistance in mosquito vectors and selecting appropriate interventions. Geneva: World Health Organization; 2022 (https://iris.who.int/bitstream/handle/10665/356964/9789240051089-eng.pdf?sequence=1, accessed 20 June 2025).