

SOP for Calibration of Sprayers

Experimental hut trials

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Purpose: Correct calibration of WHO approved sprayers for the application of insecticides for Indoor Residual Spraying in experimental huts.

Appendix: FORM AVECNET EH 001.01

Definitions

IRS	Indoor residual spray
PI	Principal investigator
PM	Project manager
SOP	Standard operating procedure
WHO	World Health Organization

Scope

This document is applicable to all staff of the project that perform spraying of insecticides for IRS application in experimental huts.

Responsibilities

1. It is the responsibility of the individuals performing the insecticide application to follow this SOP AVECNET EH 001.01.
2. It is the responsibility of the PI to ensure that the correct version of this SOP is in place at the study site and correct training has been given to all personnel that use this SOP.
3. It is the responsibility of all scientific staff to ensure that this SOP is correctly followed.

Instructions

1. Safety and precautions

- 1.1. Inspect the sprayer tank for damage and make sure sprayer hoses, regulator, lance and nozzle are clean and functioning properly.
- 1.2. Never point the spray lance in the direction of people or animals.

2. Equipment

- 2.1. Compression/pump up sprayer: Equipment for insecticide application in experimental hut studies should conform to WHO Equipment for Vector Control Specification Guidelines [1] and should be fitted with a Constant Flow Valve (Red CF Valve, flow rate 150ml/minute) and the correct nozzle type (e.g. 8002E Flat Fan Spray Tip Nozzle) and screens for the intended treatment application.
- 2.2. Measuring cylinder (1 litre)
- 2.3. Stop watch
- 2.4. Temperature / relative humidity recording device
- 2.5. Data record sheets (FORM AVECNET EH 001.01)

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3. Procedure

- 3.1. When using a constant flow valve, calibration is required to determine the actual flow rate of the individual sprayer being used.
- 3.2. When a constant flow valve is not used, the target flow rate is to be calculated (following the appropriate SOP for making spray calculations (SOP AVECNET EH 000.01) prior to sprayer calibration.
- 3.3. Using clean water, fill each sprayer to be calibrated to its capacity.
- 3.4. Close tank and ensure lid is properly sealed as per manufacturer's guidelines.
- 3.5. Using both hands, operate the pump to pressurise the spray tank. Pump the tank until the pressure has reached approx. 4 bar (or 58 psi) on the pressure gauge.
- 3.6. Agitate the spray pump immediately prior to use, check that the sprayer pressure is at the desired level and that the tank is holding pressure.
- 3.7. Record the tank pressure.
- 3.8. Start flow using the trigger on the spray lance.
- 3.9. Once the spray stream is steady put the nozzle in the top of the measuring cylinder.
- 3.10. Start the stop watch.
- 3.11. Allow pump to discharge into 1 litre measuring cylinder for 1 minute.
- 3.12. Stop the stop watch.
- 3.13. Record the tank pressure after calibration.
- 3.14. Measure the amount of water discharged.
- 3.15. Repeat three times for each sprayer and take the average.
- 3.16. Each individual flow rate measurement should be within 10% of each other.
- 3.17. The actual flow rate is to be within 10% of the target flow rate, then repeat the procedure, adjusting the sprayer tank pressure accordingly (i.e. increase the pressure if a higher flow rate is required; reduce the pressure if a lower flow rate is required).
- 3.18. Continue to adjust the sprayer flow rate until the target flow rate has been achieved.

4. References

1. WHO (2010) Equipment for vector control specification guidelines.
http://whqlibdoc.who.int/publications/2010/9789241500791_eng.pdf

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