SOP: 6.2 Rev. 1

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APPROVED BY: see cover page

TITLE: **Calibration of Application Equipment**

PURPOSE: To ensure that equipment utilized for the generation, measurement, or assessment of GLP data is properly operated and maintained.

SCOPE: This procedure applies to all test substance applications from supervised field trials of the Minor Uses Foundation Pesticide Magnitude of Residue Studies.

PROCEDURES:

1. The discharge and speed calibration of the application equipment must be performed before commencing the first application.
2. Before calibration, the spray equipment will be inspected for visual damage or potential problems. The sprayer will be operated to observe the spray pattern and ensure that the pressure regulator is operating properly.
3. Before operating the sprayer, ensure the regulator valve is set at the low-pressure position. The regulator valve can then be adjusted to the desired pressure.
4. Sprayer pressure, time, RPM (if applicable), and any other sprayer settings should be recorded in the field data notebook. The parameters used during the actual application will be recorded and should remain unchanged from those used during the calibration.



Figure 1. Discharge calibration for a boom sprayer

5. For the initial 3-run calibration, put an adequate amount of clean water in the tank and charge the system by spraying out enough water to fill the hoses. For a boom sprayer, set up collection buckets, cups, or other receptacles and collect the discharge from each nozzle for at least 30 seconds (Figure 1). For a mist-blower, determine the sprayer output by displacement by marking the initial volume with a line on the sprayer and engaging the sprayer for 30-60 seconds or longer. Determine how much volume was displaced during the spray time by adding water back to the starting volume mark on the sprayer. Repeat two more times. For either boom sprayer or mist blower, record the total volume output and time for each run. The average output of the three runs will be the discharge rate calibration (ml/sec) for the application in the trial.
6. The time necessary to apply the required amount of spray solution in the plot area is determined by dividing the amount of solution required per plot (mL/application area) by the discharge rate (mL/sec), which produces a target time (seconds) for application to the plot.



Figure 2. Speed calibration over a flat terrain using a boom sprayer

7. The sprayer speed (walking or driving) shall be timed over a known distance. Adjust speed to approximate the target time as determined in Step 6, above. Repeat speed measurements two more times for a total of three measurements. Each recorded time shall not vary more than 5% from the average of the 3-run speed measurement. Be sure to conduct the speed calibration on a similar terrain as the test plot (Figure 2) because different terrain can result in faster or slower speeds. During speed calibration, the sprayer does not need to be activated or can be activated with water if desired.
8. Record all data in the field data notebook.
9. If a trial has more than one application, a single calibration recheck is permitted for subsequent applications if application parameters or sprayer settings have not changed. The original 3-run discharge rate will be used for comparison when doing a calibration recheck. If the discharge collected during the recheck is within 5% of the discharge

determined during the initial, 3-run calibration, the spray equipment can be used for the application. If not within 5%, then an inspection of the application equipment, especially nozzle tips, for possible blockage. If the calibration recheck is still not within 5% of the initial 3-run calibration, then a new 3-run calibration must be performed. The average discharge rate from the new 3-run calibration now becomes the "target output" which may necessitate recalculating the target time. The sprayer discharge rate from the most recent 3-run calibration is used when performing the rate confirmation calculation after each application.

Approved by:



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Date