

**RECOMMENDED GUIDELINES FOR THE REGISTRATION OF AVICIDES TO  
BE USED DURING SPRAY OPERATIONS FOR CONTROL OF AVIAN PESTS**

**FOR**

**REGISTRAR ACT 36 OF 1947**



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## **1 INTRODUCTION**

The Plant Protection Research Institute (PPRI), a member of the Agricultural Research Council (ARC), has conducted research on refining the chemical control of red-billed quelea since 1992. The research was aimed at restricting environmental impact of chemical control of quelea, whilst increasing the efficacy of the chemical currently in use (Queletox<sup>®</sup> 640 ULV, Bayer SA, a.i. fenthion - 640 g.L<sup>-1</sup>). Results from this long-term study have shown that it is extremely difficult to make an objective appraisal of avicide efficacy without knowing the actual deposition within a target site. The same is true for off-target drift and aerial persistence. This investigation led to the development of new monitoring and analytical techniques to determine the extent of avicide deposition per surface area as well as drift and persistence of avicide in air. We would like to take this opportunity to provide you with our recommendations with regards to the information required for the registration of avicides.

## **2 APPLICATION PARAMETERS**

The following application parameter information is essential in order to appraise the potential environmental hazard of the avicide in question.

### **2.1 DROPLET- SIZE SPECTRA AND -COVERAGE**

Different droplet size spectra should be tested for optimum coverage of the target (bird) as well as minimum drift potential. This information is especially important where ULV formulations are concerned.

### **2.2 METEOROLOGICAL CONDITIONS**

Avicide spray operations should only be conducted under temperature inversion conditions and at wind-speeds not exceeding 10 km.h<sup>-1</sup>. The meteorological requirements for avicide spray applications should be exhibited on the label of the registered formulated product.

## **3 TRIAL SITE LOCALITIES**

In order to obtain an accurate and representative view of avicide efficacy, trial sites should be located in at least 3 different geological and climatic regions in the country.

## **4 ANALYTICAL MONITORING REQUIREMENTS**

The following analyses are recommended for the registration of avicide formulations when applied over crops as well as natural grazing areas and roosting / breeding sites:

### **4.1 RESIDUE ANALYSES**

Chemical analysis of the active ingredient should be performed on the parent compound and also on each of the metabolites / degradation products that are produced if they are more toxic than the parent compound. In situations where the metabolites / degradation products produced by the parent compound are equally or less toxic compared to the parent compound, the analytical result can be supplied as the total oxidated product or total parent compound.

#### **4.1.1 Soil Material**

Soil samples should be collected in a transect through the target site and should be taken at intervals not exceeding 40 meters. A minimum of five samples should be collected per site. Samples should be collected at two weekly intervals for at least 45 days after application, and the information used to determine the residue half life of the compound. This information can then be utilised in order to provide suitable withholding periods for grazing etc..

#### **4.1.2 Plant Material**

Plant samples should be collected from grass as well as trees. The same sampling protocol over time should be followed as used for soil analyses (par 4.1.1).

#### **4.1.3 Animal Material**

Total chemical residues should be determined in whole target birds after each application.

### **4.2 DEPOSITION RATES**

A common problem associated with avian pest control is the objective determination of avicide efficacy. Firstly, good efficacy can be the result of excessive application of

avicide on the target (bird). Secondly, poor efficacy could be the result of inadequate avicide deposition on the target (bird). Results obtained using a wool-surface-deposition system (WSDS) has shown that in almost all spray operations that were monitored, an uneven deposition was achieved by using standard application parameters. Application parameters like spray height above tree canopy level must be adjusted in order to improve target coverage. Determination of avicide deposition rates (sedimentation and impaction rates) is essential in making accurate avicide efficacy assessments.

#### **4.2.1 Sedimentation and Impaction Rates**

In order to determine total deposition rates it is necessary to measure horizontal (impaction) and vertical (sedimentation) movement of avicide droplets over a surface area. At least five measurements should be made over the target area in order to obtain a representative estimate of avicide coverage. The analysis results of deposition monitoring should be compared to the total volume of avicide used divided by the total area sprayed. Discrepancies from the actual value versus theoretical value should be noted for each sampling point.

#### **4.3 DRIFT AND AERIAL PERSISTENCE MONITORING**

During our investigation research was conducted to determine the extent of off-target avicide drift and persistence of avicide in air. Results showed that avicide residues could be detected in air, within the target area, up to 24 hours after application. Off-target drift could be detected 3 km from the site of application. We therefore suggest that drift be monitored for each formulation to be used during avian pest control. Drift should be measured at a minimum of 1 km downwind from the site of application. In this way the drift potential of each avicide formulation can be used in order to establish adequate meteorological application parameters for conducting spray operations via aerial or ground based methods.

#### **4.4 GOOD LABORATORY- (GLP) AND EXPERIMENTAL PRACTISE (GEP) GUIDELINES**

Analyses should be performed according to GLP and GEP guidelines as listed in SABS GLP guideline no. 0259

## **5 POST APPLICATION MONITORING**

The target site must be monitored for dead birds for at least three days after application in order to prevent any occurrences of secondary poisoning. Any dead or affected animal material must be collected and disposed of by incineration or burial. Ingestion of dead birds by local labourers must be prevented because of the obvious health hazards. The local farming community in collaboration with the application authority must provide labour for collection of animal material.