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Enclosure set up: a well-known system as a new semi-field approach for risk assessment of plant protection products on common voles

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Introduction

Within the EFSA (2009) guided registration of pesticides, the risk assessment for small herbivorous mammals is an all-crop scenario, which often fails to reach the trigger indicating a



safe use, even with the higher tier approach. For supporting 'weight of evidence' approaches, EFSA (2009) recommends field effect studies or population modelling. However, population modelling is currently not widely accepted as a higher tier option across European national authorities, despite the fact that it is mentioned as a reliable option in EFSA (2009) to assess the risk for wildlife. Furthermore, by conducting one field study, it is often not possible to address all concerns of covering different densities of exposed animals at different times of the year for broader GAPs. Hence, new test systems for voles are needed. Enclosures are a well-known semi-field test system used for small mammal in science (see e.g. Hahne et al. 2011, Jochym and Halle 2012). They were also used as appropriate test system in the US to verify outcome of laboratory-based studies for pesticide registration (e.g. Schauber et al. 1997) or to evaluate the efficacy of rodenticides (Sterner et al. 1996).

Set Up Example

- 10 enclosures; each 15m x 15m (225 m² per enclosure)
- 3 mm stainless steel sheets dug 1 m into the ground and 50 cm above ground to avoid escapes/migration of voles by digging or jumping above the steel sheets
- Ground cover and height can be adapted to the purpose of the study
- 6 Ugglan multi-capture live traps are installed in each enclosure to monitor the voles
 A net protects the voles from bird and mammal predators
 Starting 'population' can be 4 individually marked voles (♀ & ♂) or adapted to the purpose of the study









Applications can be performed at any time and on any density within the carrying capacity

Possible Endpoints of Enclosure Studies

- Population development
- Individually based data on
 - Survival
 - Recruitment
 - Body growth
 - Reproductive activity, etc.
- Feeding trials to investigate avoidance
- Efficiency trials
- Detailed exposure and specific exposure patterns can be investigated
- ... any tailor-made study design on individual or low density level of small mammals







Conclusion

Such enclosures will ensure that there is no immigration or emigration of intensively monitored and individually known starting populations. Because of the carrying capacities, the monitoring period is approximately 3 months or less. However, enclosure studies on small mammals are considered a very useful additional tool, particularly to investigate animals under controlled conditions, and independent of natural conditions in a given season.







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