Are the Mediterranean chameleon species possible focal species for risk assessments for PPPs in Southern Europe?

Nicolá Lutzmann1*,2, Gernot Vogl1 and Wolfgang Böhme2

1 RIFCON GmbH, Zinkenbergweg 8, 69493 Hirschberg, Germany (E-Mail: nicola.lutzmann@rifcon.de)
2 Zoological Research Museum Koenig, Adenauerallee 160, 53113 Bonn, Germany

Introduction
According to the new data requirements under the EU regulation 1107/2009, reptiles come into question regarding risk assessments of plant protection products (PPP). Although no specific data requirements on reptiles are stipulated in the respective EU documents some toxicity data are available in the open literature. These data are intended to be used in the risk assessment.

Based on this we present data of a five-month-study conducted in Egypt on the habitat preference of the two chameleon species (Chamaeleo africanus & Ch. chamaeleon) occurring in Europe (for details see Lutzmann 2002) and first data from some European distribution areas.

Chameleons are more or less insectivorous and arboreal species. Males leave the canopies only during the mating season to search for females in other trees and the females leave the canopies only for egg deposition. Therefore, chameleons are tied closely to vegetated habitats and recording chameleons in agricultural habitat (i.e. "vegetation cover") is not surprising, especially in dry climatic zones, where natural vegetation is sparse outside agriculturally used areas (i.e. areas which are irrigated; see e.g. Necas 2004).

Material & Methods
Chameleons were searched at night-time with torches in vegetated areas, since chameleons are easy to detect with this method due to their pale colouration during night. Overall 28 locations were searched in 83 nights (in total more than 180 hours of survey time). 16 locations were assigned to "agricultural land" (e.g. olive orchard) and its surroundings (e.g. hedges or single trees between fields and crop margin; see Figure below). Five survey areas were assigned to "natural habitats" and seven localities were composed of a mixture of agricultural land and surroundings including natural habitats.

Results
Overall, 139 chameleon specimens were recorded: 51 Ch. africanus and 88 Ch. chamaeleon.

Data from European distribution areas
In Greece (Samos) a team of five persons skilled in chameleon research recorded >100 chameleons (all Ch. chamaeleon) in olive and almond orchards and their surroundings (typical Mediterranean plant species like Vitex sp., Rubus sp. or Pistacia sp.). During a similar survey in agricultural habitats in Spain and Portugal chameleons were mainly observed in olives and other orchards, but also in pine forests, on camping places, in hedges, on fences around pastures and vegetated strips along roads.

Conclusions
Chameleons are found regularly in agricultural habitats. We could identify Ch. africanus and Ch. chamaeleon as species which utilize agricultural land and adjacent surroundings, particularly orchard crops. A higher percentage of adults was found inside the crop, but the majority of juveniles was found in the surroundings. Additional data from European countries support these observations, but further work are needed to obtain quantitative data on the exact habitat selection of this possible focal species for risk assessments for PPP in fruit and olive orchards in their distribution areas in Europe.


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Pair-bonding behaviour of Ch. africanus in an apple orchard

A gravid Ch. chamaeleon in a fig orchard near Marsa Matruh

Proportion of the total number of Ch. africanus across different habitats

Proportion of the total number of Ch. chamaeleon across different habitats

Proportion of adult and juvenile Ch. africanus inside crop and in crop margins

Proportion of adult and juvenile Ch. chamaeleon inside crop and in crop margin