

# Effects of thermal weed control methods in apple orchards on population dynamics of the common vole (*Microtus arvalis*)

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The common vole (*Microtus arvalis*) is the most important vertebrate pest species in European agriculture because of its damage potential during outbreaks. Management usually relies on the use of rodenticides. However, common voles are important components in agro-ecosystems. In risk assessment prior to authorization of a plant protection product in the EU, the common vole is used as a model species for herbivorous small mammals. The attempt to protect the common vole as a non-target species from unwanted effects of plant protection products needs to be balanced with fighting it as a major pest species. To base risk assessment models on relevant and realistic data, extensive and detailed information about common vole ecology and behavior in different habitats and crops is vital. In the past, many studies have been conducted dealing with population development and population dynamics of common voles

in different habitats and under the effects of various landscape modifications. And yet, there still are questions left to be answered. Weed control methods aim to reduce weeds in crops. For voles, weeds represent food and shelter. By reducing or destroying this source, it might be possible to observe changes in population development and dynamics of common voles and use this knowledge for risk assessment and for pest management methods. This project deals with two different thermal weed control methods in an apple orchard in Thuringia. Each of three replicates is treated with an open flame or hot steam system for weed control. Herbicide treated parts serve as an experimental control. We use capture-mark-recapture to assess the impact of these methods on changes in population dynamics and demography of common voles.