



Worth the risk?

Food preferences of wood mice on newly drilled fields

INTRODUCTION

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Seed treatment is a very effective and precise way to apply a plant protection product. The EU regulations demand that the ecotoxicological risk to birds and mammals has to be assessed.

However, a field just after drilling is an open, almost desert-like environment offering small mammals, like wood mice, hardly any cover against their predators.

Thus, there is a trade-off for wood mice between the food to be gained and the predation risk to be taken.

With the methods presented here, we try to shed light on the risky decisions to be made.

STUDY GOALS

- Which seed size and how many of each seed type will be taken from the open field compared to the covered field margins?
- What is more attractive for omnivorous wood mice in an open field? Animal prey or treated crop seeds?

Method 1: GUD

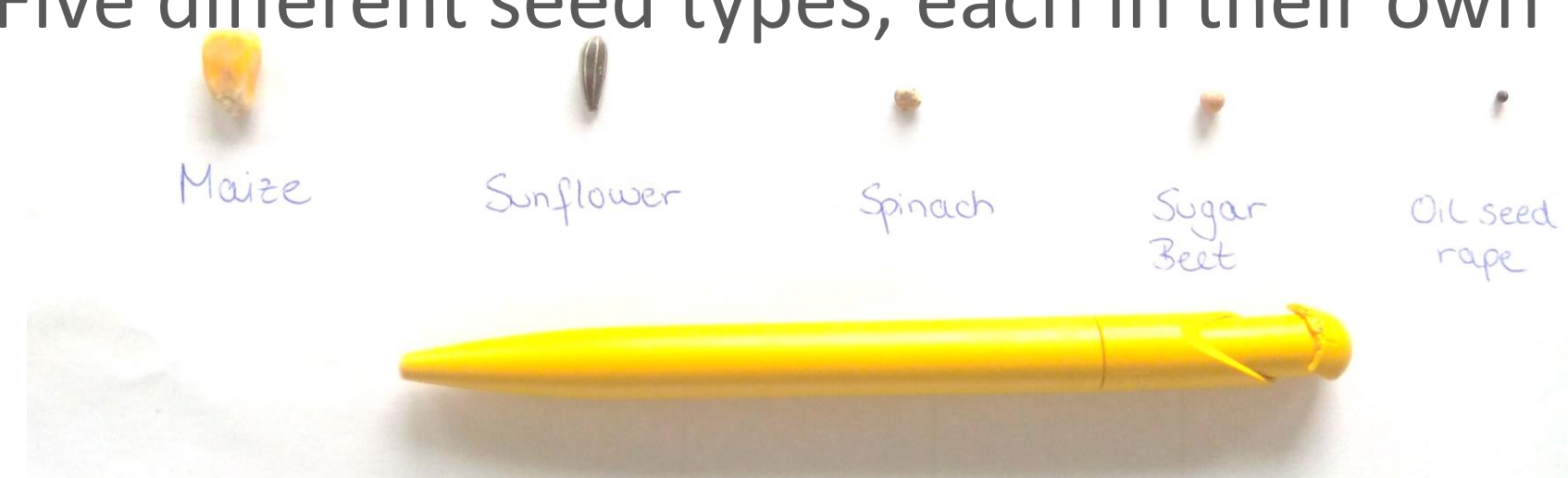
Giving-up-Density is a well established behavioural test design. Small mammals have to search for a fixed number of seeds in boxes filled with sand. The more seeds they removed from the sand after e.g. 24 h, the safer they felt in that habitat.

- When will they lose their nerves and stop searching for more?

100 sunflower seeds hidden in 600 mL of sand. The box is made of transparent plastic to offer no obvious cover.



Five different seed types, each in their own box.



Boxes were set under the cover of trees or in the open field ...

...and visited by mice - sometimes.



Method 2: Motion-triggered cameras

Seeds are tiny compared to the size of a field but there is more to find, e.g. spiders, beetles or earthworms. Wood mice are omnivorous. They will take both, animal and seed food items. Motion-triggered cameras were used for a field observation.

- What kind of food item do wood mice prefer on an open field?
- Does their preference change if there is no choice anymore?



Grids were used to place 50 OSR seeds and 50 meal-worm larvae for 2 nights, followed by 2 nights with OSR only.

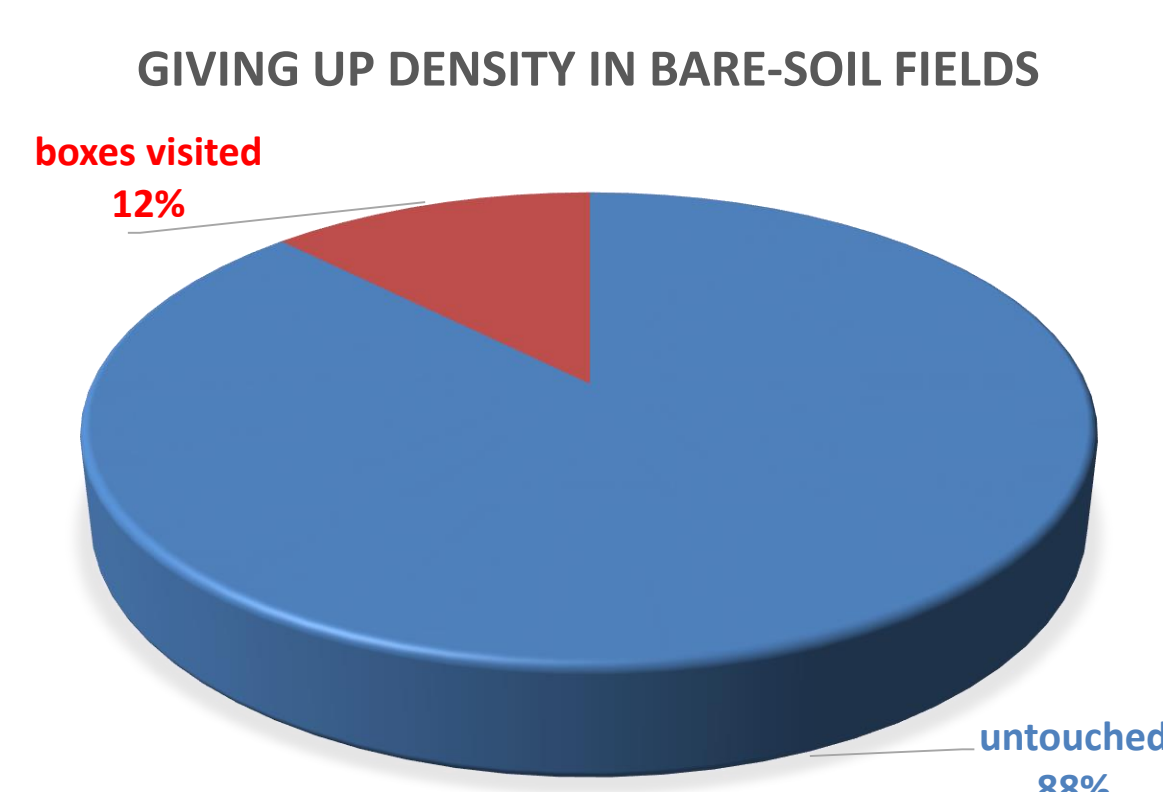


On 6 fields 5 cameras each were set in front of 1 m² food grids.

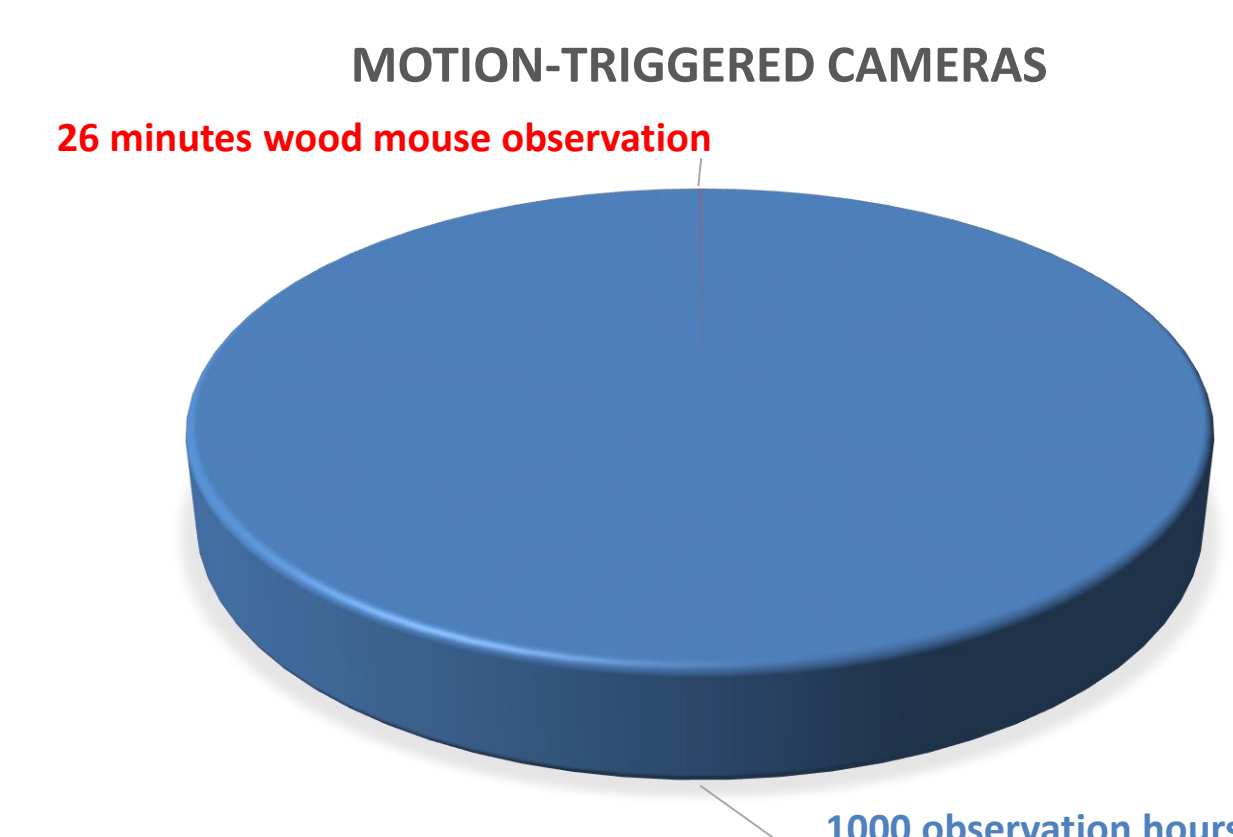


Video footages were analysed by a virtual grid (not shown here) matching the grid in the field.

Results: Wood mice in bare-soil fields are rare.



GUD: in total **127** out of 145 boxes in the field remained untouched compared to 5 boxes in the off-crop



Motion-triggered cameras: 1,000 hours of observations showed just **26 minutes** of wood mouse activity

Further RESULTS

- GUD:** from the boxes in the fields an average of 2.9% seeds were consumed while in the sheltered off-crop an average of 78.9 % of the seeds were consumed.
- GUD:** in the off-crop there was a preference for the larger maize and sunflower seeds. There were too many zeros (untouched boxes) for a in-field analysis.
- Cameras:** when both, meal-worm larvae and OSR seeds, were offered, there was a clear preference for the larvae. When only OSR was offered, the food consumption decreased and the amount of OSR taken did not compensate the larvae consumption from the previous nights.
- GUD and Cameras:** Wood mice do infrequently enter field just after drilling, most likely due to the lack of cover and the consequently increased predation risk.



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