A REVIEW OF DEFAULT ASSUMPTIONS USED IN BIRD AND MAMMAL RISK ASSESSMENTS FOR SEED TREATMENTS AND POTENTIAL MITIGATION OPTIONS FOR THE UK

CEA
CAMBRIDGE ENVIRONMENTAL ASSESSMENTS

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INTRODUCTION

Seed treatment pesticides offer a targeted alternative to spray treatments. Bird and mammal risk assessments for pesticide-treated seeds often rely on conservative defaults (e.g., high surface seed availability, high residue on seeds, assumed attractiveness to wildlife). Evidence from drilling studies and field ecology indicates several defaults overestimate exposure[1]

OBJECTIVES

This project investigated the potential for risk assessment refinement in six key factors influencing bird and mammal exposure to treated seed in the UK:

1. Extrapolation among seed types and drilling methods[1]
2. Surface seed availability after drilling[2][3]
3. Subsurface consumption & drilling depth
4. Seed selectivity (size/colour/repellents)
5. Home ranges/foraging distances
6. Foraging locations (headland vs centre)

METHODS

Synthesis of EFSA (2023)[4] guidance. Analysis of DEFRA/HSE datasets and selected industry trials . Targeted literature review to investigate objectives. Quality appraisal of sifted studies using EFSA CAT and CRED principles.

Table 1. Summary of key findings

Key finding	Summary
Food Intake Rate (FIR)	Refined FIR values for oil-containing seeds available[6]
Surface availability (Fig.1)	Variable but generally lower than defaults; winter cereals represent worst-case
Subsurface foraging	Birds rarely access buried seed; drilling depth protective; small mammals dig shallow relative to drilling depth
Selectivity	Feeding preference influenced by seed size/ colour/taste; repellent effects; but avoidance not absolute
Foraging locations (Fig.2)	Species-specific distances; headland seed exposure often higher; small birds favour headlands; larger birds no location preference, more prevalent in newly drilled fields

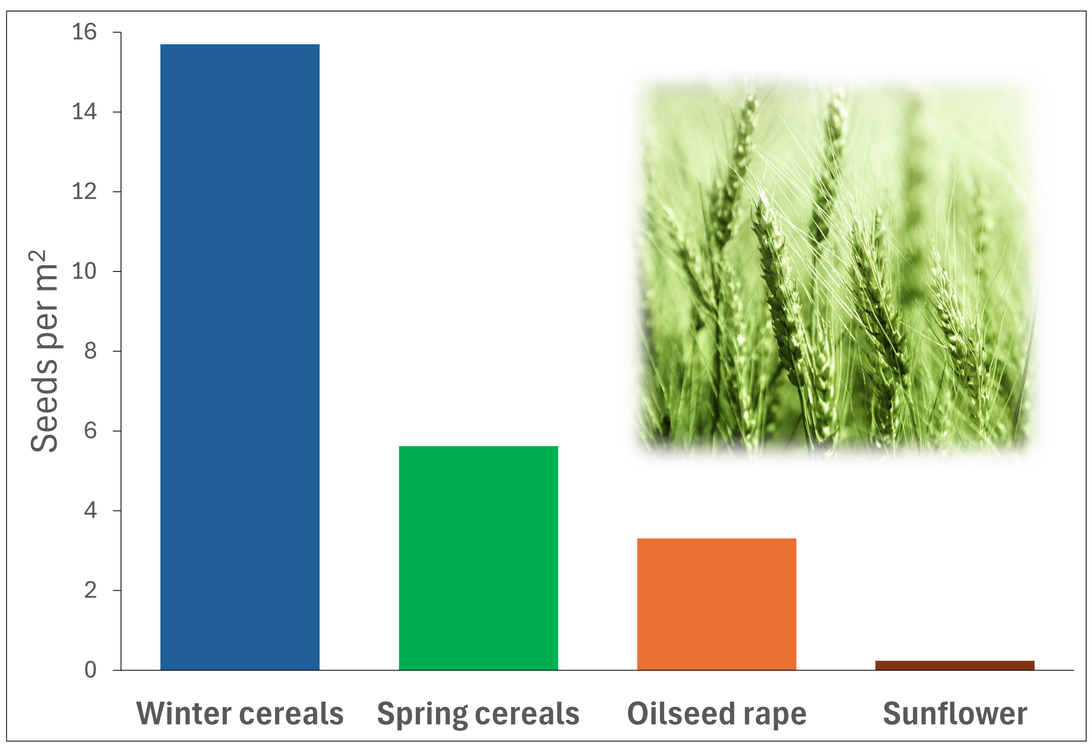

Figure 1. Mean headland surface seed availability by crop (seeds/m²) adapted from Hahne *et al*. (2024)[2]

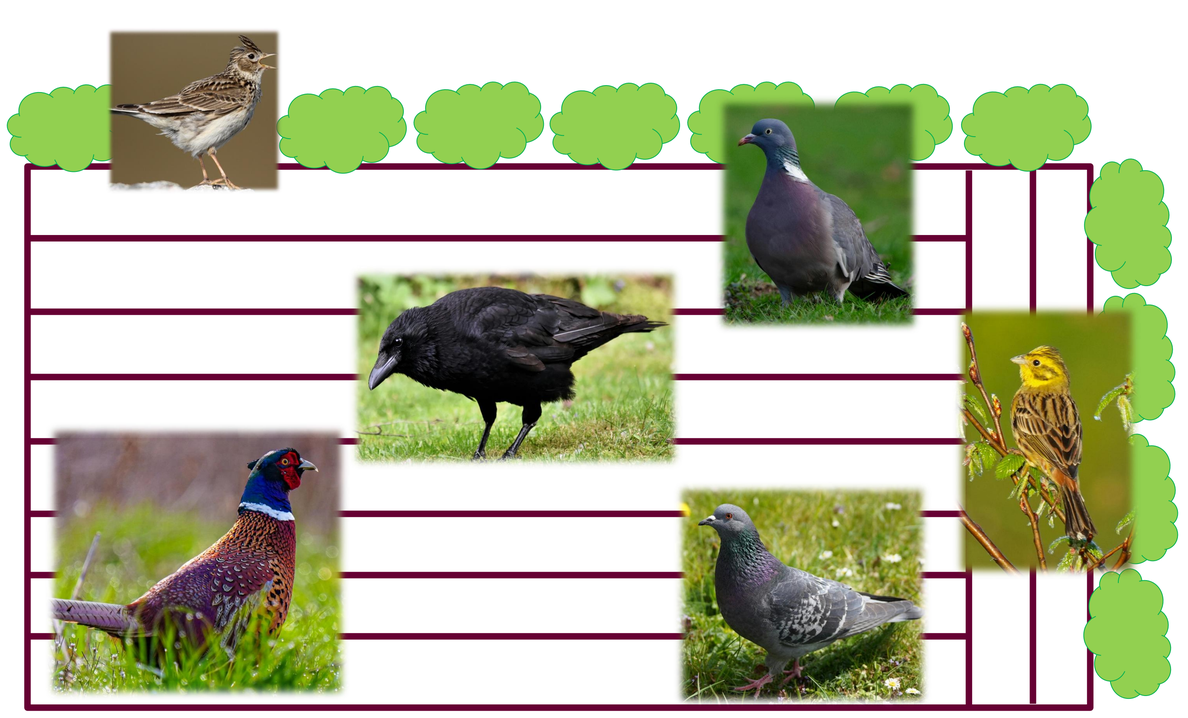

Figure 2. Representative diagram of bird foraging locations within a freshly drilled field

KEY FINDINGS

FIR refinement for oil-containing seeds available with current data. Other refinement options indicate default assumptions likely often conservative (surface seed counts, foraging behaviour) but require more research and/or case-specific considerations to implement into risk assessment.
Separate headland vs midfield exposure assessment recommended.
Further discussions around protection goals and risk mitigation options would be beneficial.

REFERENCES

1. Kafka et al. 2025. Common sowing rates of major European field crops: Results of a large-scale farmer survey. DOI: 10.1111/epp.13078
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