

DOI: 10.1111/j.1365-3180.2008.00684.x

Burial rates of surrogate seeds in arable fields

P R WESTERMAN*, P M DIXON_ & M LIEBMAN*

Departments of *Agronomy and _Statistics, Iowa State University, Ames, IA, USA, and _Dept. Hortofruticultura, Bota'nica y Jardiner'ia, ETSEA, Universitat de Lleida, Lleida, Spain

Summary

The probability of seed consumption by surface-dwelling predators depends on the duration of seed exposure on the soil surface. We investigated seed burial using painted ceramic beads as surrogate seeds. Fifty beads of three size classes each were applied to small arenas within crop fields and their fates were followed from August to October. New sets of beads were applied as soon as most beads had disappeared from the soil surface. Bead availability on the soil surface declined immediately after placement, and then declined steadily over time, with increased loss during rain and management practices. Smaller beads were incorporated into the soil / litter matrix more easily than larger beads. Bead burial differed considerably among crop environments, with more burial in forage crops (red clover, lucerne) than in row crops (soyabean, maize). The fact that seed availability differed among crop environments suggests that it can be manipulated to maximise predation risk.

Keywords: seedbank, duration of exposure, seed burial rate, seed predation risk, seed size, seed mimics, rain splash, soil surface, incorporation, seed loss.

WESTERMAN PR, DIXON PM & LIEBMAN M (2009). Burial rates of surrogate seeds in arable fields. *Weed Research* 49, 142–152.