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Harvester ant nest distribution depends on soil disturbance regime

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Running title: Harvester ant nest distribution and tillage

Declarations of interest: none

Summary

Nest densities of harvester ants (*Messor barbarus*) are high in rain-fed cereal fields in north-eastern Spain where the ants remove large quantities of seeds, contributing to reductions in weed populations. The distribution of harvester ant nests within a field can influence the effectiveness of ants as weed seed predators because areas with low ant nest density have lower weed seed removal rates. Tillage can disturb or even kill ant colonies and may be an important factor explaining the distribution of nests within fields. During the summers of 2011 – 2013, the number of nests in a 50 x 50 m area in 4 tilled and 3 no-till fields were counted. Tilled fields were disturbed twice a year, in November before cereal seeding and in July, after cereal harvest,

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