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CONTROL OF POULTRY RED MITES (ACARI: MESOSTIGMATA)

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Abstract The poultry red mite, *Dermanyssus gallinae*, is the most important ectoparasite in European egg production. The mites hide in cracks and crevices in the near vicinity of the resting places of the birds, coming out to feed mainly during the night. Large mite populations may cause anaemia or even death to the poultry, but also in lower numbers mites may be a nuisance to the birds causing decreased egg production and egg quality. Furthermore, they may have the potential of acting as reservoir/carrier for various micro-organisms e.g. *Salmonella*.
In the EU-project SAFEHOUSE, partners from 11 European countries aim at developing new methods for prevention and control of *Salmonella* in egg production systems with particular focus on the transition to enriched cages in the European Union (EU). One objective is to develop new control methods against poultry red mites, based on a combination of mite-pathogenic fungi and desiccant dust. Earlier studies on stored product insect pests have indicated that there could be a synergistic effect of combining mite-pathogenic fungi with a desiccant dust. To provide basic knowledge for choosing the best desiccant dust for combination with the mite-pathogenic fungal isolates different products have been tested for their efficacy, speed of action and repellency to the mites at different levels of air humidity. The products include diatomaceous earth (of natural origin), synthetic silica products and combinations of the two.
Measurements of the water loss from groups of mites exposed to the different types of desiccant dust have shown a clear positive relationship between killing speed and water loss. Another series of experiments measuring both killing speed and avoidance behaviour of the mites have shown that the fastest acting products also have the strongest repellent activity on the mites. The synthetic silica product is the fastest acting type, but it also has the strongest repellent effect on the mites. In contrast, the natural diatomaceous earth products are killing the mites at a slower speed, but they are less repellent. Both repellency and killing speed depend strongly on air humidity, so high air humidity leads to slower killing speed and a lower repellency.