

Preface

From 26 to 28 May 2004 an international seminar was held in Wageningen, the Netherlands, about current knowledge and advice on rodent management and control strategies on organic pig and poultry farms in Western Europe. This seminar was organized to address and discuss the issues of rodent control in relation to the principles of organic farming, food safety, animal health, efficacy, costs and animal welfare and suffering.

There are two main groups of rodents. The first group consists of native field rodent species that are part of the wildlife fauna and adapted to live in natural habitats. They become pests when appearing in crops and pastures. The second group consists of commensal rodents that live in fields and crops, but also in association with humans, near buildings, feed stations and in shelters for farm animals. Both types of rodents are harmful because they consume or foul stored agricultural produce, act as disease vectors or destroy infrastructure.

Rodent management is necessary to protect the food production chain from damage and health hazards to livestock and humans. The objective of managing rodents is to minimize livestock's exposure to these vectors, and to regulate their populations in case their density is expected to grow dramatically. *Field rodents* cannot be eradicated but their populations can be kept low. An infestation of livestock facilities with *commensal rodents* can be prevented, and in the case of their appearance, eradication must be aimed for.

In an organic context, rodent management is especially important for two reasons. First, organic livestock has outdoor access and can therefore come into closer contact with rodents than conventional livestock, resulting in larger veterinary risks. Second, traditional control methods as applied in conventional livestock production such as the use of poison, often do not fit in with the philosophy of organic farming, although they may be allowed by the current rules for organic production.

This special issue deals with different aspects of rodent control in organic farming. It contains nine papers. One paper (Jensen *et al.*) deals with the unexpected large diversity in *Salmonella* infection in outdoor pig production. The unidentified source of the different *Salmonella* serotypes isolated implies inadequate control possibilities and may therefore pose problems with food safety. In another paper (Rodenburg *et al.*) it is shown that *Campylobacter* appears to be the main risk on organic broiler farms, so that it would be interesting to study specific risk factors of infection with *Campylobacter* on these farms. A third paper (Kijlstra *et al.*) reviews the risk factors for a farm animal to become infected with *Toxoplasma gondii* and presents a risk analysis with a number of control points to limit the on-farm risk.

There are several papers in this special issue focusing on strategies to control rodents and therefore reduce the risks of infection. One paper (Leirs *et al.*) studies the frequency and distribution of specific structural farm elements in relation to the occurrence of rats and examines the allocation of baiting points to these elements. It shows that rat activity mainly occurred at six specific structural elements. Another paper (Pelz & Klemann) describes experiments with rodenticide treatments against

farm rats using different anticoagulant bait preparations. The results demonstrate the significance of resistance and bait uptake behaviour for the efficacy of rat control measures and suggest the need for adapted rat-control strategies to reduce hygienic problems and the risk of non-target poisoning hazards for livestock and wildlife.

In an extensive questionnaire study addressed to outdoor pig farmers in Denmark, Leirs *et al.* explored the relations between the occurrence and pest importance of rodents on their farms. A trapping study on two farms showed a high small-mammal diversity in and around the pigsties. Mice were only rarely considered a problem but more than half of the farms controlled rats. The presence of rats depended on farm size, storage of straw stacks near the pigsties and the use of automatic feeders. Rats were more often a problem when open drinking basins were used or when food was stored near the pigsties.

Singleton *et al.* showed results of experiments over 4 years on ecologically-based rodent management in lowland irrigated rice crops. This type of management could substantially reduce control costs and rodenticide use in Indonesia and Vietnam.

To monitor risk factors for diseases and to control these risks factors as a means to prevent diseases, Bonde & Sørensen suggested the implementation of health management based on Hazard Analysis Critical Control Point (the HACCP concept) and described a procedure for developing such a HACCP system in organic sow herds. The development of a HACCP system requires the quantification of risk factors by means of epidemiological studies or alternatively by an expert panel.

In a final paper (Meerburg *et al.*) an overview is given of the achievements of the seminar. The take-home message is that effective management requires a thorough understanding of the ecology of the rodent species. Based on this ecological understanding, a rodent management strategy can be designed consisting of prevention, monitoring and control. From an organic perspective, most efforts should be invested in prevention and monitoring. Organic farmers should select a solution that guarantees food safety and healthy livestock and that fits in best with their own farming philosophy. Ecologically-based actions should be tested in replicated studies through farmer participation using an adaptive management framework.

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