



## Health and welfare of organic livestock



Animal health and welfare are important principles of organic animal husbandry. In the Netherlands organic animal husbandry has proven to perform better than the conventional sector on many aspects of animal welfare. The Dutch organic animal husbandry sector has recognised animal health and welfare as crucial and maintains a strong focus on further improvement. Dutch scientists are working to advance the health and welfare of organically kept animals. Additionally, they focus on innovations and directly applicable solutions to specific problems concerning diseases and behaviour. This research is often carried out in close collaboration with farmers.



Maarten Vrolijk

In the Netherlands, as in other Western European countries, the focus on animal welfare has increased strongly in recent years. Not only consumers, but also government authorities and the industry are now paying more attention to this aspect of animal husbandry. Organic agriculture centres on using natural production methods based on respect for animals and careful use of natural resources. This almost implicitly justifies the claim that organic animal husbandry ensures a high degree of animal health and welfare. Strict requirements are adhered to, for instance regarding housing space, outdoor runs, and feed. These exceed minimum legal demands. However, few objective criteria exist to substantiate the welfare claims. Certain measures, such as outdoor runs, even entail risks to animal health and welfare.

“Simple answers and straightforward solutions would be nice, but unfortunately they are not always available”, says Maarten Vrolijk. He leads the research programme Organic Animal Husbandry, in which Wageningen UR and Louis Bolk Institute are pursuing a mostly demand-driven approach for developing relevant knowledge regarding animal health and welfare. Vrolijk: “Animal health and welfare are major elements of the programme, and are studied as a whole. Welfare, health, nutrition, and housing can in fact not be considered in isolation. Our research always explicitly involves the entire setup.” Vrolijk sees the increased social awareness of animal husbandry as an opportunity. “The demand for sustainable products is now increasing and the organic sector should benefit.”

A 2007 study on the pros, cons, and uncertainties related to animal welfare in the organic sector is an example of this integrated approach. The study presents both animal-related indicators for animal welfare and the impact of environmental factors. The results show that the Dutch organic sector scores better marks than the conventional sector on many welfare aspects. At the same time improvements on certain issues are still needed.

“Welfare, health, nutrition and housing should be considered as a whole”

Maarten Vrolijk



### Role of farmers

Organic animal husbandry scores well with respect to natural behaviour. Animals are given ample opportunities to behave in a natural way. Examples are rooting possibilities for pigs and the free range system for hens. The sector also performs well with respect to health-related performance, as demonstrated by the fewer metabolic disorders found in organic cattle. There are also points of concern, however. In organic farming piglets run a bigger risk of overlying, for instance. Another example is the more frequent occurrence of lung and liver damage in pigs caused by parasites.

Monique Bestman, researcher of Animal Health and Welfare at the Louis Bolk Institute, stresses the important role of the farmer. “Health and welfare fully depend on what the farmer does. The husbandry system is important but one can still work in an animal-unfriendly way in perfect housing facilities. On the other hand you can find a very animal-friendly approach in less perfect housing facilities.” According to Bestman, the different systems cannot be classified simply as good or bad: “A more principled organic farmer would probably tend to wait longer before treating an infection with antibiotics in order to give the animal the chance to recover without interference. But waiting too long may result in needless suffering. Disease prevention is always preferable to treatment.” In a large project Bestman is monitoring a number of health characteristics in 50 flocks of organic laying hens, while at the same time recording details of their housing and care. Bestman: “We also look back on the rearing period and take the relationship between farmer and animals into account.”

### Resilience

Keeping animals in a sterile environment is not acceptable in organic farming because it would be a far from natural environment. Offering optimum freedom of movement, in outdoor runs for instance, is precisely one of the objectives of organic animal husbandry. However, this may have a negative effect on resistance to diseases. “It is logical that the organic sector focuses more on increased resistance and health promotion than on direct disease control”, says Gidi Smolders. He heads a research project on the resilience of organic dairy cattle. In this project, information about health, resistance, welfare and milk production is gathered from about 100 organic dairy farms.

In a completed pilot project Smolders looked at a number of organic dairy farms in the Netherlands where, for practical and idealistic reasons, no antibiotics are used. The image of the sector will strongly benefit from this development, because many consumers of organic products actually already expect that no antibiotics are being used. Smolders: “Lower medicine costs are not a real motive but are seen as a positive side-effect. The peace of mind associated with antibiotics-free production is an unexpected benefit: there is no chance whatsoever of antibiotics getting into the milk tank by accident.” Farmers who avoid antibiotics put much emphasis on creating a herd that suits the conditions on their farm. Production demands are lower as well: annual production per cow is more than 1000 kg lower than on other farms. Smolders: “Udder health in particular requires continuous attention and is thus an integrated part of total management.” Antibiotics are partly replaced by established measures such as milking out, but other alternative therapies such as phytotherapy, homeopathy and other alternative treatments are applied as well. “The farmers are enthusiastic about this method of animal husbandry. Even without a bonus on the milk price, farmers will continue on the antibiotics-free road they have taken. In an organic farm network two groups of farmers will exchange experiences and stimulate each other to eliminate the use of antibiotics as much as possible”, says Smolders. A follow-up project will look for proven effective alternatives to antibiotics, in particular against mastitis.

In another project, the focus is more on selecting the appropriate type of animal for the organic animal production systems. This means types of animal that show less health problems with a higher ratio of roughage in their diet, while maintaining an acceptable production level.

### Practical value

The experiments into animal health and welfare are carried out on experimental farms, in farm networks, or on specifically selected farms. Bestman mainly studies poultry on working farms. “This has both advantages and disadvantages. I could have included other factors in my studies, which would have yielded conclusive evidence at an earlier stage. However, the distinct advantage of working on real farms is the high practical value. Anything interesting discovered on an existing farm runs a good chance of being a good, economically feasible alternative”, concludes Bestman.



Monique Bestman

“Health and welfare fully depend on the actions of the farmer”

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## Natural grazing behaviour of goats

**Grazing is often difficult to incorporate in organic dairy goat farming. Research by the Louis Bolk Institute shows that various factors are critical to the success of goat grazing. Goat behaviour is an important factor. Goat keepers participating in the 'BioGeit' project therefore asked researchers to analyse the natural grazing behaviour of landrace goats in Dutch nature areas. This resulted in recommendations for improvement in goat grazing. It is important, for example, to have a varied ration supply in the meadow. It is also wise to let goats start grazing at an early age and to leave them outdoors as much as possible. Harmony in the herd is another important factor in creating optimum grazing conditions and for farm management in general. To achieve this, 'escape artists' should always be removed and the structure of the group should be as stable as possible.**



Thanks to this kind of practical research we now know that the rearing stage of laying hens is extremely important for health, welfare and egg production at a later age. For instance: the basis for feather pecking, a form of aberrant behaviour, is largely laid during raising. "Chicks that develop well during the first two weeks, that are healthy and that do not peck feathers, will perform well later in life. On the other hand, chickens that do start pecking feathers during rearing, will in fact continue to do so", according to Bestman. In a study that lasted several years she monitored 30 flocks of breeding hens. The hens were reared on different farms and then taken to 40 organic laying hen farms. The chicks were visited four times during rearing and again at an age of 30 weeks. According to Bestman this study shows that feather pecking at a later age can often be traced back to behaviour during rearing. "Often the symptoms during rearing are very subtle but the seeds are sown at that stage. If hens peck feathers during rearing, it only gets worse during laying. Genetic characteristics may be of some importance, but aspects around housing and care during rearing really play a key role in feather pecking. The animals can be prepared for their future housing system by creating the right conditions at the rearing stage.

### Organic farrowing pen

Herman Vermeer of the Wageningen UR Animal Sciences Group, also thinks that the rearing stage plays a much more important role than is often thought. According to him this is also true for other farm animals. "Rearing aspects that go beyond the EU regulation for organic pig husbandry are not yet given much attention in organic pig farming, but do offer opportunities. Piglets in European organic pig husbandry are often kept indoors and on a paved outdoor area, as allowed by the EU regulation. We hardly know the effect of early grazing on the social development and resistance of young pigs." Vermeer himself has been closely involved in the design of a better farrowing pen for breeding sows that reduces the risk of piglets being killed by overlying. Because the mother sow has more

room to show her motherly instincts in the farrowing pen, more piglets get killed by overlying in the European organic pig sector. They get crushed underneath their mother when she turns over. A diabolical dilemma, says Vermeer: "We have investigated various adaptations to the design of the farrowing pen, such as: heating or no heating around the nest, much or little straw and a low-placed bar to prevent the sow from rolling over. All these had only minimal effect on piglet mortality. We think that little is to be gained from improving the design of the pen; we are now concentrating on identifying good management measures. We will, for example, have to work towards more vital and uniform farrows." The sector has identified various measures, involving for example the monitoring and moving of piglets. The most promising of these measures are being tested on an organic experimental farm and a number of commercial farms. According to Vermeer, such a cooperative approach is a good example of the research philosophy in the Netherlands. "We as researchers provide knowledge and solutions but the pig farmers decide."

### Biological fly control

Flies in organic pig husbandry are best controlled by preventive hygienic measures, such as the removal of rubbish, food leftovers, and manure from the pens. Additionally, biological control options with nematodes, predatory wasps or the use of microbial insecticides, such as *Bacillus thuringiensis*, are available. This was found during an analysis carried out by the Animal Sciences Group. Although chemical insect control is not forbidden under current EU regulations, the organic pig farming sector prefers not to use chemicals. The application of chemicals is difficult in any case because organic pigs are free-ranging and thus kept in fairly open systems. Flies are not only irritating to pigs and workers but they can also have a negative effect on production and transmit contagious diseases. Insect traps in which flies are electrocuted cannot be used in animal housing as they only increase the risk of pathogens spreading. Although biological control of flies looks promising, the scientists involved think potential side effects should be looked into first. For now, optimal monitoring and preventive measures seem to provide the best solutions.

### Herbs as an alternative veterinary product

In the 'Fyto-V' project, Dutch scientists are working on the identification of herb preparations that may be suitable as veterinary medicines or health-promoting feed additives in organic animal husbandry. Such phytotherapeutics are already being used against a range of animal diseases such as diarrhoea or mastitis, but their effectiveness is frequently doubted. Nevertheless, the interest in herbs has increased, not only in organic farming. At the moment the conventional animal sector is in urgent need of alternatives after a ban on antibiotics as a growth promoter. The Dutch project is coordinated by Rikilt – Institute for Food Safety in Wageningen. So far, very little research into the veterinary application of herb preparations has been carried out. This is remarkable because there are strong indications that herbs such as oregano and garlic are capable of killing malignant bacteria. One complicating factor is that herb preparations involve a mixture of substances, which

## Suppressing worm infestations in finishing pigs

**Thorough cleaning of the outdoor pen and influencing defecation behaviour seem to help suppress worm infestations in organic finishing pigs. This is the view of Herman Vermeer of the Wageningen UR Animal Sciences Group, leader of a partly EU-financed research project. This study, involving a total of 480 organic finishing pigs was carried out over a two-year period. At the start of the experiment half the animals were placed in a pen infected with eggs of the very contagious *Ascaris* roundworm. After about ten weeks, half-way through the production cycle, half of the pens and outdoor ranges were thoroughly cleaned. "Keeping the dirt areas as small as possible and thorough cleaning does reduce the spreading of worm infestations, but such measures cannot fully prevent infestation", says Vermeer. Infestation causes poor technical results and rejected livers at slaughtering. Pig farmers use conventional veterinary products (anthelmintics) to control this gastrointestinal parasite. "Such pharmaceuticals are in fact in conflict with the philosophy of organic animal husbandry", acknowledges Vermeer. Besides suppressing worm infestation through hygienic measures, the preventive effect of certain herb mixtures against mild roundworm infestations in finishing pigs is also being investigated.**

## Calves stay with their mother

Calves suckled by their mother or another suckling cow show faster initial growth. This is the result of a comparative study by the Louis Bolk Institute into three calf-rearing methods: feeding with a milk replacer, feeding with tank milk, or suckling for three months. After three months, when they had reached the so-called 'weaning age', the suckling calves had reached a higher body weight. This difference remains visible until the age of one year. This study is part of the project 'Calves with cow', in which a number of commercial farms have adopted a more natural calf-rearing method. Currently, dairy calves are often taken from their mothers immediately after birth for separate rearing. This is a cheap, practical and orderly system. The dairy farmers participating in the project, however, wish to stimulate bonding between cow and calf. They expect this to strengthen the species-specific behaviour of the animals, while also improving their resistance. The significance of this rearing method for cow, calf, and farm is being investigated in this experiment. Meanwhile, milkable heifers reared in the suckling system are now available on a number of farms; experiences with and performances of these animals can now be taken into account as well.



creates problems for pharmacologists and registration authorities. The Fyto-V database now contains information on the application and scientific background of hundreds of herb preparations currently on the market. Researchers will select the most promising products to determine their effectiveness. Ultimately, the Fyto-V project aims to increase the acceptance of phytotherapeutics that have proven to be effective.

## Family herd network

Research in the family herd project goes beyond allowing calves to be suckled longer by their mothers. The intention is to create a husbandry system for dairy cattle in which the animals are kept together as families rather than being separated according to age or production group. While designing this new system, the focus is on animal welfare: in addition to not separating the animals, it includes a lot of grazing, no

dehorning of cattle, and improved animal health (due to higher resistance). The envisioned animal husbandry system must also satisfy technical requirements as well as public concerns. Economic sustainability is also paramount. This project of the Wageningen UR Animal Sciences Group is currently still in the design phase. Twelve organic dairy farmers have volunteered to participate in the project.

### Literature

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