

Improvement of environmental quality and animal welfare in poultry farms by application of biological promoters

L. CABRINI and P. BRIGNOLI

Eurovix - R&D Department – V.le Europa, 10 - 25046 Cazzago S.M. (BS) – Italy

E-mail: brignoli@eurovix.it

The concept of animal welfare has been considered worldwide by researchers under several aspects that investigate, with different approaches, physiological and pathological components related to this issue. Animals are able to compensate, within certain limits, for a single stress factor, but the concurrence of different factors may cause more serious effects. The following sources of stress were studied in different species of animals: genetics, animal density, management and equipment, the management of the litter and air quality. An innovative solution for the management of the litter and environmental quality is the application of biological (bacterial-enzymatic) promoters. The aim of these applications is to optimise and stabilise the fermentation of organic materials present in the litter through the modulation of environmental microflora. Consequently ammonia and toxic gas emissions decrease and the quality of the environment will improve. In this study the results of applications in two different farms are provided; a broiler farm in Italy and a laying hen farm in South America. In the first case a house treated was compared with two similar houses without treatment. In the second case the data were collected in the same house, before and after the treatment. The bioactivation system consisted in the application of a product in powder form that was spread on the litter in the case of broilers, while in the case of laying hens, it was applied on the manure pits. In broilers observations were done on the concentration of ammonia nitrogen (measured with a Dräger Pac III). The concentration in the treated house was of 15 ppm, while in the control it was of 40 ppm (-60%). In the treated house the litter was drier and softer, without bad smells. Regarding laying hens, the observations were done before and during the treatment on the concentration of ammonia nitrogen (80% reduction) and on ethological evaluation: laying hens were more curious, attentive and active during the treatment period (photographic evidence). The results show that the quality of environmental data improved in both cases, and in the case of broilers better condition of the litter was observed. To reduce pollutants inside the farm means to improve the welfare of animals and to protect the receptors air, water, soil. The data collected showed a correlation between better welfare of the animals and improvement of productive performance of the broilers (16% reduction of mortality and 3% average weight increase per animal in the treated house). The data obtained in different situations and weather conditions show a large potential development in the application of these technologies. Reducing the power of an important source of stress, such as ammonia, improves the quality of the farm and the animals.

Keywords: animal welfare, biological promoters, ammonia, environmental quality, litter management