EFFECT OF FLOOR TYPE ON FOOTPAD INJURIES IN DOES: A PILOT STUDY

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ABSTRACT

In the Netherlands, welfare regulations indicate that rabbits should be housed on 3.02 mm wire floors instead of the 'old' 2 mm wire floors. It was expected that does on the new 3.02 mm wire floors had less footpad injuries as compared to does housed on the old 2 mm floors. However, there were no data supporting this suggestion. In addition, data on wire floors with plastic mats were also lacking. Therefore we studied footpad injuries in does housed on 2 mm, 3.02 mm wire floors and 3.02 mm wire floors with a plastic mat. Here we show the first results measured on three different rabbit farms with 2 and 3.02 mm floors. One farm also had 3.02 mm wire floors with a plastic mat. Footpads were scored in at least 20 does per floor type per farm during seven reproduction cycles. Results indicate that there are no differences between 2 and 3.02 mm wire floors. After two reproduction cycles footpads become injured which has a negative effect on the welfare of the does. Plastic mats seem to have a positive effect on the footpads, but this should be confirmed on more farms.

Key words: Footpad injuries, Floor type, Welfare, Pain.

INTRODUCTION

Footpad injuries are commonly observed in commercial rabbit production. Footpad injuries (also called pododermatitis or sore hocks) may cause pain and infections and will finally result in culling of the doe. Footpad injuries have a clear negative effect on rabbit welfare and on economic costs. Different factors may have an effect on the occurrence of footpad injuries, i.e. the rabbit breed, climate in the house, hygiene, the type of feed and the floor type. It has been suggested that the floor type is the key factor for the occurrence of footpad injuries in rabbits (Drescher and Schlender-Böbbis, 1996).

In the Netherlands, welfare regulations for commercial rabbit farms have become effective since 2006 (PVE, 2006). One of these welfare regulations is that the wire size should be increased from about 2 mm to 3.02 mm, and that the space between the wires should be between 10-16 mm. It was expected that on these 'new' wire floors, footpad injuries would be less common than with the 2 mm 'old' wire mesh floors. However, there were no data supporting this suggestion. In the meantime also plastic slats (mats, 40 x 40 cm) have been developed that can be fixed to the wire mesh. Farmers indicate that does prefer to lie on these mats and that the incidence of footpad injuries decreased with the use of mats, but we also have no data supporting this suggestion.

The objective of this study was to compare footpad injuries in rabbit does housed on 'old' 2 mm wire floors, 'new' 3.02 mm wire floors and 3.02 mm wire floors with plastic mats. In this paper we report the results of the first part of this study, in which we analyzed footpads in does on three different commercial rabbit farms.

MATERIALS AND METHODS

Animals and experimental design

Three commercial rabbit farms, using cages with 2 mm and 3.02 mm wire floors, participated in the study. On each farm between 20 and 30 primiparous hybrid New Zealand White (approximately 4-4.5 kg bodyweight) does were selected per floor type for the experiment. One of these farms had also cages with 3.02 wire mesh floors and plastic mats (Extrona). Does were housed on the different floor types and were not moved to other cages until they were excluded from the experiment due to mortality or selection. Farmers were asked not to treat footpad injuries. Footpads of all does were scored during a maximum of seven reproduction cycles (reproduction rhythm of 42 days) according to the method as described below. Regular farm management was applied. Does that were culled during the experiment were not replaced.

Footpad scores

Footpads were scored according to Table 1 (Rommers and Meijerhof, 1996). For each doe, both footpads were inspected and the worse scoring was noted. In case of plastic mats on the wire mesh, it was also noted if the plastic mats were damaged by gnawing and for all cages it was scored if the wire floors were clean or dirty. Does with footpad score 4 were culled from welfare point of view.

Table 1: Footpad scoring according to Rommers and Meijerhof (1996)

Score	
0	Footpads intact
1	No hairs, callus formed (<2.5 cm)
2	No hairs, callus formed (>2.5 cm)
3	Callus open, crackes have been formed
4	Wounds

Statistical Analysis

For 2 and 3 mm floors, analysis of variance was carried out using GLM procedure of SAS (SAS, Inc., Cary, NC, USA). Differences between LSM were analyzed by the PDIFF option of the GLM procedure of SAS. Differences in feed injuries between floor types were analyzed using an ANOVA with farm, production cycle, floor type and the interactions. Non-significant interactions were deleted from the model.

For farm 1, who had three different types of floors an ANOVA was carried out with production cycle and floor type as fixed factors.

RESULTS AND DISCUSSION

Figures 1 and 2 show the results for the different floor types averaged for the three farms for the 2 and 3 mm floor type, respectively. In figure 1 and 2 the percentage of does per food pad score is presented for both floor types. There was no interaction between farm, production cycle and floor type. There were differences among farms and among production cycles ($P<0.05$). Food pad scores became more severe the longer the experiment lasted. On 2 as well as 3.02 mm wire floors intact footpads are only observed in the majority of the does during the first two reproduction cycles. Although we started with nulliparous does, sometimes does even start with damaged footpads. After two reproduction cycles scores rapidly increased, which means that the footpad conditions become worse. There were no differences between floor type 2 and 3 mm. The average score was 1.3 and 1.4 for 2 and 3 mm floor, respectively. In total 11 and 10 does had score 4 for respectively 2 and 3 mm floor type. It should be taken into account that the number of does in the experiment decreased with time due to selection and mortality and does with severely injured food pads (score 4). This may explain that, for example, does with score 4 in production cycle 4 are not present any more in production cycle 5. On average, on the

2 mm floors 50,3% of the does and on the 3.02 mm floors 30,3% of the does were lost due to mortality or selection after seven production cycles.
In general, 2 and 3.02 mm wire floors were not dirty (data not shown).

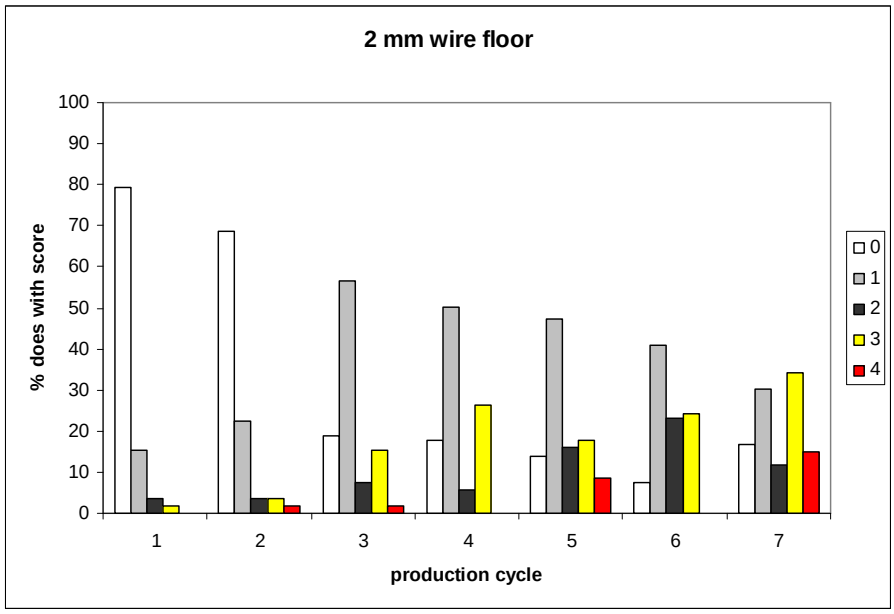

Figure 1: Percentages of does with the different scores for the footpads on the 2 mm wire floors, averaged for the three farms

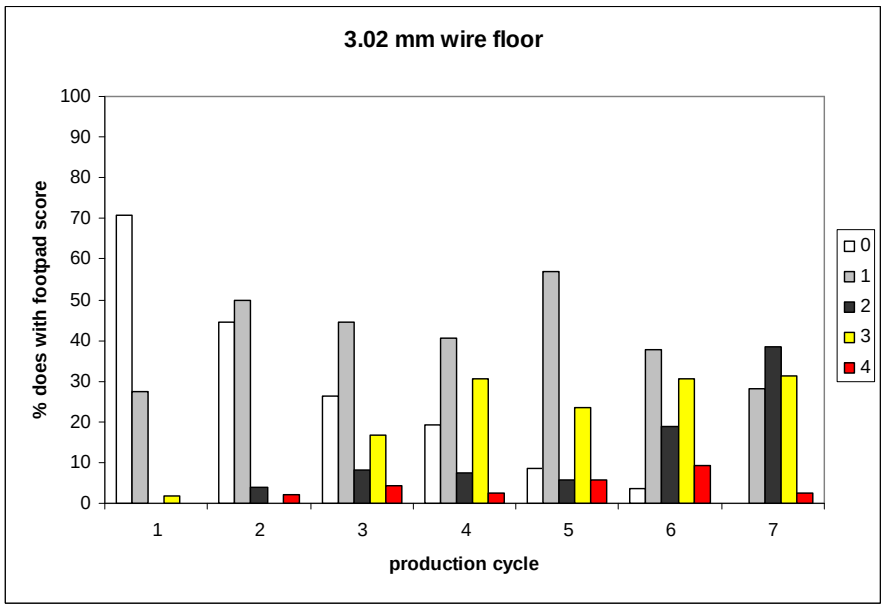

Figure 2: Percentages of does with the different scores for the footpads on the 3.02 mm wire floors, averaged for the three farms

Only one farm also had 3.02 mm wire floors with plastic mats. The results of the does on these floors are shown in Figure 3. In Figure 3 the percentage of does with the different footpad scores over the production cycles is presented. Figure 3 indicates that on floors with plastic mats footpad conditions are much better. On this particular farm, the wire floor with plastic mat had significantly ($P<0.05$) lower footpad scores than the wire floors without plastic mats, 0.9, 1.0 and 0.5 for 2 mm, 3 mm and 3 mm with plastic mat, respectively. However, this should be repeated for more farms. These floors were not dirty and hardly any damage was observed for the mats (data not shown). On this floor type, loss of does due to selection and mortality was 27%.

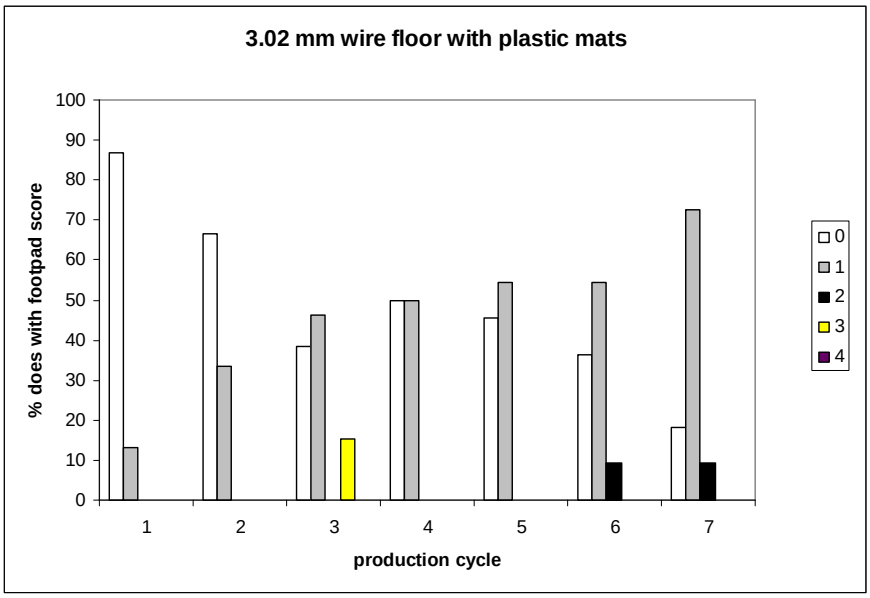

Figure 3: Percentages of does with the different scores for the footpads on the 3.02 mm wire floors with mats (n=1 farm)

It was expected that footpads would be better on 3.02 mm floors as compared to 2 mm floors. However, the results of this pilot experiment do not support this suggestion, although we should include more farms. This may be due to the fact that the 3 mm wire floors were new and had no 'smooth' surface as compared to the old wire floors that were worn out. The experiment will therefore be repeated after two years, to study if the results on the 3.02 mm floors are better when these floors have a more 'smooth' surface. In addition, more farms will be visited. On the other hand, increasing the wire diameter may not be sufficient to improve footpad conditions in rabbits. It should be further studied if plastic mats indeed have a positive effect on footpad injuries, as our results suggested. Plastic mats may be a relative simple and cheap measure to improve rabbit welfare.

The results of the 3.02 mm and 2 mm wire floors without mats indicate that does may suffer from decreased welfare after two production cycles, when footpad injuries became common. According to Drescher and Schlender-Böbbis (1996) welfare is decreased when callus is present on the footpads (score 1 in the present experiment). Although we are not completely sure that does with score 1 suffer from pain and thus have a decreased welfare, footpads with callus indicate a risk for higher footpad scores (callus open, crackes, wounds) and thus indicate a risk for rabbit welfare. It may be clear that footpads with scores 3 and 4 cause pain and a decreased welfare.

CONCLUSIONS

This pilot experiment indicates that footpad injuries do not decrease on 3.02 mm wire floors as compared with 2 mm wire floors. Whether this is caused by the fact that the 3.02 mm floors are new and have a more rough surface than the 2 mm floors should be studied in the future, as well as the positive effect plastic slats seem to have on prevention of footpad injuries.

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