Mixing feed in compost increases use of rooting areas for lying behaviour but not cleanliness for growing-finishing pigs

Maximilian Knoll[a,b], Eddie A.M. Bokkers[b], Christine Leeb[c], Cäcilia Wimmler[c], Heidi Mai-Lis Andersen[d], Rikke Thomsen[e], Barbara Früh[a], Mirjam Holinger[a]

[a] FiBL, Frick, Switzerland

[b] Wageningen University & Research, Wageningen, The Netherlands

[c] University of Natural Resources and Life Sciences BOKU, Vienna, Austria

[d] Aarhus University, Foulum, Denmark

[e] Centre for Free Range Livestock, Randers, Denmark

Providing pigs with a rooting area filled with an appropriate material enables exploratory behaviour and is thus considered to improve animal welfare. Mixing corn pellets into the rooting material could increase use and exploration while reducing elimination behaviour in the areas. To investigate this hypothesis, on a farm we compared two experimental pens (E) with rooting areas filled with compost, into which 2 kg of corn pellets were mixed every morning, with two control pens (C, rooting areas filled with compost only). The experiment lasted 34 weeks with seven replicates in total. Group size ranged between 21-35 pigs (N = 386, $\tilde{x}$ = 29). We registered behaviour once a week through direct observations of the complete outdoor area and additional video recordings of the rooting area. Behavioural variables were activity or resting, rooting, agonistic and play behaviour. We assessed cleanliness of the rooting material via visual scoring and chemical analysis of compost samples. The latter included tests on dry matter content, conductivity, and ammonium concentration as indicators for urine in the material. Data were analysed with linear mixed-effects models. Results showed that there was a tendency for a higher number of pigs in the rooting area in E than in C (p=0.06). In E, more pigs were lying in the rooting area than in C (p=0.04). There was no difference in activity and rooting behaviour between treatments. The overall use of the outdoor run did not differ between treatments. Time of day influenced all

recorded behaviours in the rooting area ($p<0.001$). Conductivity and ammonium concentration in the compost increased the longer the compost remained in the rooting area ($p<0.001$) with no difference between treatments, indicating animals in both groups used the rooting areas for elimination. We conclude that mixing corn pellets into rooting material increases the use of rooting areas for lying behaviour, but not rooting behaviour and cleanliness.