Application

Good health can be achieved when rearing fattening pigs outdoors on the Island of Ireland. Doing so in an agroforestry system, rather than a grassland system, reduces sunburn and accelerates growth. The latter means that slaughter weight can be reached in a shorter period, potentially resulting in labour savings. The mechanism(s) behind the slightly higher gait scores and levels of skin damage in the agroforestry system require further attention.

Introduction

Outdoor pig rearing is often perceived as an animal welfare friendly alternative to indoor rearing, mainly because of increased opportunities for rooting and exploration (Studnitz et al. 2007). However, outdoor paddocks cannot be separated from the outside world or cleaned and disinfected in the same way that modern indoor pens can (Bonde and Sørensen 2004). Thus, there is potential for increased exposure to pathogens and adverse climatic conditions. Unless restricted to concrete runs, outdoor rearing is often carried out on grassland. Grassland offers little protection from adverse climatic conditions and is susceptible to poaching during rain, with potential knock-on effects on pig health. The use of wooded areas can be expected to limit such issues, as trees provide shelter and help evaporate water (Manevski et al. 2019). This study aimed to compare the health of pigs kept in grassland and agroforestry systems.

Materials and Methods

We used two batches of 48 undocked boars each (batch 1: May-August 2023, batch 2: September-December 2023). Pigs ((Landrace x Large white) x Hampshire)) were born indoors, received anthelmintic treatment, and had limited outdoor access during their last two weeks indoors (to acquire experience with electrical fencing). At 8 weeks of age, the pigs were brought to the outdoor plots site in Loughgall, Northern Ireland. The outdoor site contained four grassland plots (GRASS, ryegrass dominated) and four agroforestry plots (AF, ±354 22-year-old oaks/ha). Each ±1000 m2 plot was equipped with a 6 m2 insulated shelter and a 2-space feeder and housed 6 pigs simultaneously. Plots used for batch 1 were reused for batch 2. Attempting to minimize terrain degradation, plots were further divided into 3 strips, and pigs, shelters and feeders were moved to a new strip after 4-5 weeks. Pigs were fed commercial diets ad libitum. During a period of unforeseen heat (within batch 1), temporary wallows were dug for all plots, whereas tarpaulins were used to create shade on the grassland plots only. Pigs remained on site until 21-22 weeks, but since batch 1 breached the fences when 19 weeks old no data from this point onwards is described here, except for batch 2 data on endoparasites and performance.

Tail damage, ear damage, body lesions, pig cleanliness, swellings, ectoparasites, nasal discharge, gait scores, sunburn, and body condition scores were determined after arrival and at 13 and 18 weeks of age (all visual scores, taken from within 2 m). Faecal consistency, melena and hematochezia were determined visually weekly. Individual faecal samples were collected at 10, 15 and 19 weeks of age (batch 1 only) and 20 weeks of age (batch 2 only), pooled per plot and analysed for Ascaris, Trichuris and Strongyle eggs using mini-FLOTAC. Feed disappearance and weight gain were calculated over the entire experimental period (batch 1: 76 days, batch 2: 91 days).

Data were analysed using (generalized) linear mixed models. Plot type was included as a fixed factor and pig age, age×plot type and baseline values were added where appropriate. Batch was added as a random variable in all models, as was group (except for pen-level data, i.e., performance, weekly faecal scores).

Results

Ectoparasites, nasal discharge, melena, hematochezia and reduced cleanliness were completely absent, whereas tail damage, swellings and endoparasite eggs were only observed once each. Ear damage (never worse than superficial scratches) tended to occur more in AF than GRASS (odds ratio: 2.3 [CI95%:0.9-5.8], P=0.09). The number of body lesions was relatively low, although slightly higher in AF than GRASS, with greater differences at 18 weeks (mean lesions/side at 13 weeks: 1.2±0.3 vs. 0.5±0.2, at 18 weeks: 1.4±0.4 vs. 0.3±0.1, P=0.02). Similarly, gait scores were good overall but slightly worse for AF than GRASS (23 vs. 19±5 SEM on a scale of 0-150, P=0.02). Sunburn (never worse than reddened skin without blisters) occurred significantly less in AF than GRASS (odds ratio: 0.07 [CI95%:0.03-0.21], P<0.01). Weight gain and disappearance of grower and finisher feed (in kg/pig/day) were all significantly greater for AF than GRASS (1.10 vs. 1.03±0.02 SEM, P<0.01; 1.55 vs. 1.43±0.03 SEM, P=0.02; and 2.77 vs. 2.66±0.27 SEM, P=0.04, respectively). Body condition, faecal consistency and feed conversion were not significantly affected by plot type (P>0.10).

Conclusions

Although health was generally good in both outdoor rearing systems, rearing fattening pigs on agroforestry plots rather than grassland plots reduced sunburn, which occurred frequently even under local weather conditions. Furthermore, agroforestry resulted in more rapid growth which should allow slightly shorter rearing periods, potentially with beneficial effects on labour requirements. Effects on growth were clearest in the summer batch and may be due to the greater availability of shade in the agroforestry system. Slightly more skin damage and worse gait scores occurred in the agroforestry plots than in the grassland plots. The causal mechanism for this may require further study, even though scores were never severe.

References

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