

Effect of silvopasture versus open pasture systems on fearfulness and leg health in fast-growing broiler chickens

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A silvopasture system involves the deliberate integration of trees, forages, and livestock, which may result in high-quality habitat for broiler chickens. However, such systems have not been widely adopted by the poultry industry. The aim was to investigate the impact of silvopasture (SP) or open pasture (OP) access on fearfulness and leg health in fast-growing broilers. A total of 886 day-old Ross 708 chicks in Experiment 1 (E1) and 648 chicks in Experiment 2 (E2) were raised indoors from day (d) 1 until d22 (E1) or d23 (E2). Thereafter, birds were raised in SP plots (32% mean canopy cover) and OP plots (0% canopy cover). Experimental units (16 in E1 and 12 in E2) within each system (125m²) were established with flexnet electric fences and contained a chicken coop. Stocking density was 20.8 kg/m² in E1 and 21.8 kg/m² in E2 on d42-43). Fearfulness was assessed using a tonic immobility test (n=159 birds in E1, and n=156 in E2), leg health was assessed through footpad dermatitis (FPD; 0-4 score), hock burns (0-4 score; n=160 in E1, and n=155 in E2), gait (0-2 score; n=160 in E1, and n=156 in E2), and a latency-to-lie (LTL) test (n=111 in E1, and n=154 in E2) at 5 weeks of age. Data were analyzed with JMP Pro using non-parametric tests. SP birds were less fearful than OP birds (79.1±8.7 vs 103.5±10.0sec; p=0.031 in E1, and 59.1±6.7 vs 102.8±9.7sec; p<0.001 in E2). SP birds showed better FPD scores than OP birds (mean±SEM score of 0.08±0.04 vs 0.19±0.04; p=0.012 in E1 and 0.17±0.04 vs 0.48±0.08; p=0.004 in E2). SP birds had (p=0.049) healthier hocks than OP birds in E1 (mean score of 0.15±0.04 vs 0.26±0.05). In E2, SP birds tended (p=0.074) to show healthier hocks than OP birds (mean score of 0.03±0.01 vs 0.09±0.02). In E1 (p=0.019), but not in E2 (p=0.217), SP birds had worse gait than OP birds (mean score of 0.21±0.04 vs 0.08±0.02). LTL did not differ in E1 (p=0.221) or E2 (p=0.658). Even though gait was worsened in SP in E1, raising birds in silvopastures reduced fear and improved footpad and hock health compared to the birds raised in open pastures. Overall, both silvopasture and open pasture systems resulted in excellent leg health.

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