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### **Access to grazing for high yielding dairy cows: a novel experience in Northern Italy**

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In recent years, lack of pasture access revealed to be a major area of concerns for consumers regarding dairy farming. Despite that, the practice of grazing dairy cattle has been almost completely abandoned in Italy. The objective of the present study was to evaluate the effects of grazing for a limited part of the day on milk production, milk composition and cattle welfare. The study was conducted during spring 2017 in a commercial dairy farm located in the Po Valley (45.17 N, 10.75 E). A total of 133 lactating Holstein cows were assigned to either continuous housing in a free-stall barn (CONF) or housing in a free-stall barn and grazing a ryegrass-based pasture 6 h/day after the morning milking (PAST). Cows in both treatments were fed the same mixed ration ad libitum inside the barn. Intake of mixed ration and pasture were measured weekly at group level. Individual milk production and composition were measured monthly. Cows were scored for body condition (BCS; 1=thin, 5=fat) monthly and for lameness (1=not lame, 5=severely lame) at the beginning and at the end of the experiment. Data were analysed with linear mixed models for repeated measures. Cows in the PAST group consumed 3.41 kgDM of herbage but had lower total DMI compared with cows in CONF (22.34 vs 24.99 kgDM,  $P<0.01$ ). Milk production of primiparous cows did not differ between treatments (32.11 vs 31.61 kg/day,  $P=0.77$ ) while multiparous cows in PAST produced significantly lower milk than in CONF (33.85 vs 37.65 kg/day,  $P<0.01$ ). The PAST cows tended to have lower BCS compared with CONF counterparts (3.28 vs 3.40,  $P=0.07$ ). Part-time grazing did not affect SCC significantly (199 vs 275 cells  $\times 1000/\text{mL}$ ) but reduced milk fat percentage (4.03 vs 4.29 %,  $P<0.05$ ). Overall, milk protein content did not differ between treatments (3.35 vs 3.42 %,  $P=0.13$ ) but a significant reduction was observed in PAST during the course of the study. At the end of the experimental period, cows in the PAST group had better gait than those in CONF (1.40 vs 1.62 ,  $P<0.05$ ). Results indicate that providing access to grazing has the potential to improve cattle welfare but may pose some challenges in maintaining adequate milk quality and body condition.