

# STUDY OF A FIVE SIEVES FECAL PARTICLES SEPARATOR TO EVALUATE FIBER AND DRY MATTER DIGESTIBILITY IN DAIRY CATTLE

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The aim of the present study was to evaluate the undigestible neutral detergent fiber and dry matter (auNDFom and uDMom) in fecal particle fractions of lactating dairy cows. Fecal particles were stratified through a battery of five sieves with 4.6, 2.36, 1.18, 0.6 and 0.15 mm pore sizes. Four dairy farms located in the Parmigiano Reggiano cheesemaking area, feeding hay based total mixed ration (TMR), were involved. Five fecal samples were collected in each farm from 5 multiparous lactating Holstein cow of 60 to 90 days in milk (DIM). For each analysis, 250 g of feces were weighted and put on the upper sieve, then washed with a water flow of 250 ml/s for 30 seconds. Washing was performed at each level of the sieves battery during sieves removal. Sieving was repeated three times for each sample. Residual material on each sieves was recovered, dried at 50°C for 48 hours and weighted. Triplicate of each sieve were pooled to carry out the “*in vitro*” digestion, for the determination of uDMom and auNDFom at 240 hours of fermentation.

Statistical analysis was performed through the univariate procedure of the general linear model, using farm and sieves as fixed factors and cow as a random effect; post hoc LSD test was performed.

Results showed that 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> sieves residues were similar for auNDFom proportion but differed from the 1<sup>st</sup> and 5<sup>th</sup> and escape residues (64.12, 67.55 and 64.18 %DM vs 57.39, 55.77% and 16.90% respectively;  $P \leq 0.001$ ), while, considering the uDMom, the 3<sup>rd</sup> sieve residue showed the highest value ( $P \leq 0.001$ ), being equal to 75.13 %DM. It appears that fecal particles having dimensions between 1.18 and 2.36 contained the lowest digestible dry matter residue, indicating the highest exploitation by the lactating cow, while this range is wider if auNDFom (%DM) is considered.

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