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Chemical homogeneity and particle size distribution of dairy cow TMR along the feeding alley with different mixing times.

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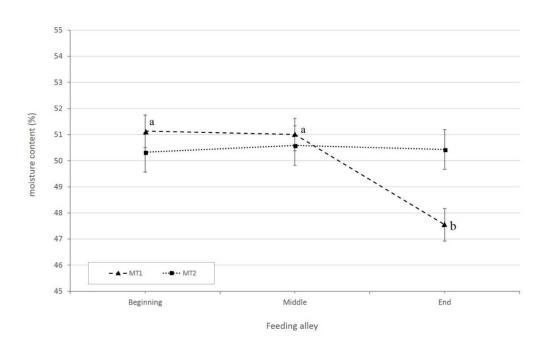
Following the concepts of precision feeding, the right components balance (Sova et al., 2014) and the correct particle size distribution (PSD, Khan et al., 2014) of total mixed ration (TMR) are essential for a complete homogeneity of the diet and are strongly influenced by adopted mixing time (MT, Humer et al., 2018, Schingoethe et al., 2017). The aim of the trial was to determine the influence of two MTs (MT1≤7min and MT2>7min) on the chemical homogeneity and PSD along the feeding alley (FA). Diets were performed with a horizontal cutter-mixer wagon (Gulliver 4016, Sgariboldi), and TMR samples were collected from the beginning, middle and end of the feeding alley after discharge. Triplicate samples of the diet were collected for chemical composition analyses (moisture, CP, Ash, EE, NDF and ADF) and for PSD evaluation (Heinrichs and Kononoff, 2002) over two months (two sampling/week). Statistical analysis was performed by a PROC MIXED for repeated measurements of SAS (SAS Institute, Cary, NC, 2015). MT1 evidenced a non-uniform distribution of moisture content along the feeding alley (P=0.05, Figure 1): lower moisture was found at the end of the feeding alley compared to the beginning and the middle (47.55 vs 51.13 and 51.00%, respectively; P<0.01). No significant effects of MTs were recorded for other chemical parameters. The PSD showed trend to a higher retained amount of fibre in MT1 upper sieve (14.79 vs. 10.14%; P=0.06), while lower amount of feed was found in middle and bottom sieve than MT2 (38.9 and 12.81 vs 42.17 and 14.32%, respectively; P=0.08 and P=0.06). Despite the trend for MT, MTxFA evidenced no significant differences for PSD. Day of sampling evidenced significant variation both in chemical and physical composition (P<0.05). Obtained preliminary data evidenced the influence of MTs on composition and on PSD of the provided diet; results suggest to daily measure moisture of raw material in order to avoid negative changes in dry matter intake.

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Figure 1: Moisture content along the feeding alley by different mixing time. Different letters refer to significant differences between different mixing time for P≤0.05.



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