

Particle size distribution of forages and mixed rations, and their relationship with ration variability and performance of UK dairy herds

Article

Supplemental Material

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Supplementary Tables

Table S1. Particle size distribution of rations fed as TMR (n = 28) or PMR (n = 22) on 50 dairy herds.

| Fractions ¹ (mm) | PS distribution (% DM) | | SED | P value |
|-----------------------------|------------------------|------|------|---------|
| | TMR | PMR | | |
| >60 | 0.1 | 0.1 | 0.08 | 0.14 |
| 44-60 | 3.8 | 11.8 | 2.41 | 0.002 |
| 26.9-44 | 20.7 | 32.8 | 3.99 | 0.004 |
| 19-26.9 | 3.8 | 5.1 | 0.95 | 0.16 |
| 8-19 | 39.1 | 29.6 | 3.57 | 0.01 |
| 4-8 | 14.1 | 8.9 | 1.42 | < 0.001 |
| <4 | 18.4 | 11.7 | 2.62 | 0.014 |
| X _m ² | 14.0 | 26.5 | 2.98 | < 0.001 |

¹Rations were separated into 7 fractions; >60, 44-60, 26.9-44, 19-26.9, 8-19, 4-8 and <4 mm.

²Geometric mean particle size.

Table S2. Particle size distribution of dried 0hMR (n = 50), 4hMR (n = 50), RefMR (n = 33), grass silage (n = 50) and maize silage (n = 34) on 50 dairy herds.

| Fractions ¹ (mm) | Particle size distribution (% DM ± SD) | | | | |
|-----------------------------|--|--------------|--------------|--------------|--------------|
| | 0hMR | 4hMR | RefMR | GS | MS |
| >26.9 | 16.2 ± 16.31 | 17.0 ± 16.42 | 25.6 ± 19.95 | 45.7 ± 17.83 | - |
| 19-26.9 | 3.5 ± 1.88 | 3.7 ± 3.06 | 4.0 ± 2.06 | 2.9 ± 1.25 | 4.3 ± 2.17 |
| 8-19 | 38.0 ± 10.03 | 38.2 ± 9.11 | 36.4 ± 10.77 | 34.4 ± 11.79 | 52.6 ± 10.53 |
| 4-8 | 21.2 ± 6.68 | 20.4 ± 6.21 | 18.3 ± 7.23 | 10.1 ± 4.02 | 28.8 ± 7.26 |
| <4 | 21.1 ± 9.24 | 20.6 ± 9.20 | 15.8 ± 7.46 | 6.9 ± 3.61 | 14.3 ± 6.08 |
| SED | 1.53 | 1.53 | 1.88 | 1.41 | 1.77 |
| P value | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |

¹Rations were separated into 5 fractions; >26.9, 19-26.9, 8-19, 4-8 and <4 mm.

Table S3. The particle size distribution (%DM) of North American rations.

| Fractions (mm) | Sova <i>et al.</i> (2013) | Endres and Espejjo (2010) | DeVries <i>et al.</i> (2011) | Hosseinkhan <i>i et al.</i> (2008) | Miller-Cushon and DeVries (2009) | White <i>et al.</i> (2017) |
|----------------|---------------------------|---------------------------|------------------------------|------------------------------------|----------------------------------|----------------------------|
| >19 | 19.8 | 10 | 18.4 | 18.1 | 8.8 | 11.4 |
| 8-19 | 34.3 | 41.5 | 33.6 | 32.3 | 46.6 | 31.9 |
| 4-8 | 35.5 | 47.6 | 48.0 | 49.6 | 44.5 | 56.7 |
| <4 | 10.5 | - | - | - | - | - |