**Supplementary tables**

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| **Supplementary Table 1.** Effect of pre-grazing herbage mass (1500 or 2500 kg DM/ha) and post-grazing sward height (4 or 6 cm) on the sward vertical distribution of chemical composition and *in vitro* digestibility in May, June and September. | | | | | | | | | | | | | | | | |
|  | **Grazing treatment** | | | | **SEM5** | **Layer** | | | | | | **SEM6** | **P-value7** | | | |
|  | **1500-4** | **1500-6** | **2500-4** | **2500-6** |  | **1** | **2** | **3** | **4** | **5** | **6** |  | **PGHM** | **PGSH** | **Layer** | **PGHM × PGSH** |
| May |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| OMD (g/kg) | 809 | 794 | 810 | 804 | 6 | 691 | 792 | 827 | 838 | 833 | 843 | 7.4 | 0.341 | 0.106 | 0.001 | 0.445 |
| CP (g/kg OM) | 146a | 160a | 125b | 117b | 5.3 | 103 | 110 | 127 | 146 | 160 | 174 | 6.5 | 0.001 | 0.558 | 0.001 | 0.050 |
| NDF (g/kg OM) | 482 | 501 | 502 | 498 | 8.8 | 575 | 512 | 482 | 473 | 476 | 457 | 9.5 | 0.273 | 0.343 | 0.001 | 0.137 |
| ADF (g/kg OM) | 236 | 253 | 257 | 268 | 4.2 | 317 | 275 | 255 | 242 | 231 | 200 | 5.1 | 0.001 | 0.001 | 0.001 | 0.543 |
| WSC (g/kg OM) | 210a | 173b | 196ab | 194ab | 7.4 | 152 | 191 | 197 | 199 | 205 | 215 | 9.5 | 0.611 | 0.017 | 0.001 | 0.029 |
| Ash (g/kg OM) | 102 | 102 | 97 | 102 | 5.1 | 171 | 100 | 89 | 88 | 82 | 75 | 6.2 | 0.554 | 0.632 | 0.001 | 0.645 |
| June |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| OMD (g/kg) | 784 | 771 | 762 | 768 | 6.5 | 669 | 757 | 778 | 800 | 809 | 812 | 7.9 | 0.063 | 0.559 | 0.001 | 0.151 |
| CP (g/kg OM) | 193 | 192 | 131 | 145 | 5.2 | 119 | 133 | 166 | 188 | 195 | 189 | 6.4 | 0.001 | 0.233 | 0.001 | 0.179 |
| NDF (g/kg OM) | 466a | 565b | 558b | 583b | 12.9 | 628 | 595 | 555 | 530 | 493 | 458 | 15.8 | 0.001 | 0.001 | 0.001 | 0.005 |
| ADF (g/kg OM) | 265a | 309b | 314bc | 326c | 3.8 | 359 | 336 | 314 | 291 | 271 | 250 | 5.7 | 0.001 | 0.001 | 0.001 | 0.000 |
| WSC (g/kg OM) 1,2,3 | 161 | 147 | 178 | 154 | 5 | 149 | 147 | 152 | 159 | 165 | 189 | 6.2 | 0.019 | 0.000 | 0.001 | 0.314 |
| Ash (g/kg OM) | 113 | 120 | 102 | 101 | 5.2 | 145 | 104 | 104 | 107 | 98 | 96 | 6.3 | 0.005 | 0.477 | 0.001 | 0.469 |
| September | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| OMD (g/kg) | 771a | 767ab | 750b | 766ab | 6.1 | 670 | 749 | 781 | 791 | 794 | 797 | 7.5 | 0.088 | 0.369 | 0.001 | 0.112 |
| CP (g/kg OM) | 162 | 174 | 162 | 165 | 5.2 | 121 | 129 | 155 | 180 | 198 | 212 | 6.6 | 0.354 | 0.178 | 0.001 | 0.395 |
| NDF (g/kg OM) | 469a | 499b | 554d | 527c | 6 | 556 | 534 | 510 | 498 | 495 | 480 | 7.4 | 0.001 | 0.795 | 0.001 | 0.001 |
| ADF (g/kg OM) 4 | 264a | 287b | 319c | 289b | 4 | 308 | 305 | 297 | 297 | 272 | 260 | 5 | 0.001 | 0.396 | 0.001 | 0.001 |
| WSC (g/kg OM) | 215ab | 213ab | 195b | 231a | 7.8 | 218 | 235 | 233 | 214 | 197 | 184 | 9.5 | 0.876 | 0.032 | 0.002 | 0.020 |
| Ash (g/kg OM) | 125 | 115 | 113 | 111 | 5.2 | 184 | 116 | 103 | 101 | 97 | 93 | 6.4 | 0.154 | 0.293 | 0.001 | 0.399 |
| Layer 1 = bottom of the plant, layer 6 = top of the plant OMD = in vitro organic matter digestibility, CP = crude protein, NDF = neutral detergent fibre, ADF = acid detergent fibre, WSC = water soluble carbohydrates and Ash = crude ash | | | | | | | | | | | | | | | | |
| 1PHGM × PGSH × layer interaction: 1500-4 vs. 1500-6 vs. 2500-4 vs. 2500-6 values of 111 vs. 121 vs. 163 vs. 200 for layer 1, 131 vs. 146 vs. 184 vs. 127 for layer 2, 150 vs. 141 vs. 182 vs. 134 for layer 3, 157 vs. 147 vs. 183 vs. 147 for layer 4, 184 vs. 153 vs. 175 vs. 150 for layer 5, and 233 vs. 173 vs. 183 vs. 168 for layer 6, respectively. | | | | | | | | | | | | | | | | |
| 2PGHM × layer interaction (*P* < 0.001) : values of 116 vs. 181, 139 vs. 156, 145 vs. 158, 153 vs. 165, 168 vs. 162, 203 vs. 175 for PGHM-1500 vs. PGHM-2500 in layers 1, 2, 3, 4, 5 and 6, respectively. | | | | | | | | | | | | | | | | |
| 3PGSH x layer interaction (P < 0.05): values of 137 vs. 160, 157 vs. 137, 166 vs. 137, 170 vs. 147, 180 vs. 151 and 208 vs. 170 for PGSH-4 vs. PGSH-6 in layers 1, 2, 3, 4, 5 and 6, respectively. | | | | | | | | | | | | | | | | |
| 4PGSH x layer interaction (P < 0.05): values of 298 vs. 319, 303 vs. 306, 298 vs. 296, 308 vs. 286, 280 vs. 265 and 264 vs. 257 for PGSH-4 vs. PGSH-6 in layers 1, 2, 3, 4, 5 and 6, respectively. | | | | | | | | | | | | | | | | |
| 5SEM = standard error of the mean for PGHM × PGSH | | | | | | | | | | | | | | | | |
| 6SEM = standard error of the mean for layer | | | | | | | | | | | | | | | | |
| 7There were no PGHM × PGSH × layer interactions, except for WSC concentration in June | | | | | | | | | | | | | | | | |
| a,b,c means within a row with different superscripts differ (P < 0.05) | | | | | | | | | | | | | | | | |

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| **Supplementary Table 2.** Effect of pre-grazing herbage mass (1500 or 2500 kg DM/ha) and post-grazing sward height (4 or 6 cm) on grazing behaviour over a 48-hour allocation and ruminating behaviour during the first and second 24 hours of a 48-hour allocation. | | | | | | | | |
| **PGHM** | **1500** | | **2500** | | **SEM** | **P-value** | | |
| **PGSH** | **4** | **6** | **4** | **6** |  | **PGHM** | **PGSH** | **PGHM × PGSH** |
| Average over 48 hours | | |  |  |  |  |  |  |
| Eating time (min/d)1 | 592 | 582 | 528 | 571 | 19 | 0.084 | 0.409 | 0.211 |
| Pre-hension time (min/d)2 | 497 | 490 | 444 | 478 | 17.7 | 0.109 | 0.468 | 0.281 |
| Grazing bouts (n/d) | 8.2 | 7.8 | 6.7 | 6.9 | 0.36 | 0.014 | 0.802 | 0.410 |
| Grazing both duration (min/bout) | 78.1 | 78.1 | 82.4 | 86.9 | 4.34 | 0.168 | 0.617 | 0.621 |
| Grazing bites (n/d) | 20935 | 25136 | 20520 | 24577 | 833.3 | 0.575 | 0.001 | 0.933 |
| Bite rate (bites/min)3 | 42.2 | 51.6 | 46.2 | 51.4 | 2.15 | 0.392 | 0.009 | 0.365 |
| First 24 hours | |  |  |  |  |  |  |  |
| Ruminating time (min/d) | 333b | 423a | 476a | 473a | 16.2 | 0.001 | 0.028 | 0.020 |
| Ruminating bouts (n/d) | 11.5b | 13.3a | 13.2a,b | 12.6a,b | 0.37 | 0.226 | 0.157 | 0.013 |
| Ruminating bout duration (min/bout) | 31 | 33.5 | 38.4 | 40.5 | 1.6 | 0.002 | 0.190 | 0.909 |
| Ruminating mastications (n/d) | 20467b | 28047a | 30726a | 32012a | 1243.2 | 0.001 | 0.007 | 0.035 |
| Ruminating mastication rate (chews/min) | 61.5 | 66.2 | 64.6 | 67.7 | 0.69 | 0.010 | 0.001 | 0.305 |
| Ruminating boli (n/d) | 353b | 468a | 537a | 525a | 19.2 | 0.001 | 0.028 | 0.011 |
| Ruminating mastictions per bolus (n/bolus) | 56.9 | 58.9 | 56.6 | 60.3 | 0.99 | 0.594 | 0.021 | 0.409 |
| Ruminating boli per ruminating bout (n/bout) | 30.6 | 35.3 | 40.9 | 41.7 | 1.41 | 0.001 | 0.089 | 0.214 |
| Second 24 hours | |  |  |  |  |  |  |  |
| Ruminating time (min/d) | 295 | 406 | 399 | 444 | 18.1 | 0.004 | 0.003 | 0.106 |
| Ruminating bouts (n/d) | 13.4 | 13 | 14.2 | 14.6 | 0.43 | 0.022 | 0.964 | 0.306 |
| Ruminating bout duration (min/bout) | 23.6b | 33.0a | 28.8a,b | 32.1a | 1.16 | 0.100 | 0.001 | 0.030 |
| Ruminating mastications (n/d) | 16864 | 26224 | 24109 | 28469 | 1306.4 | 0.007 | 0.001 | 0.092 |
| Ruminating mastication rate (chews/min) | 57.2c | 64.6a | 60.4b | 64.0a | 0.67 | 0.081 | 0.001 | 0.023 |
| Ruminating boli (n/d) | 341 | 451 | 461 | 508 | 15.8 | 0.001 | 0.001 | 0.083 |
| Ruminating mastictions per bolus (n/bolus) | 48 | 56.2 | 51.7 | 55.1 | 1.65 | 0.465 | 0.008 | 0.179 |
| Ruminating boli per ruminating bout (n/bout) | 25.4b | 34.8a | 32.5a | 34.8a | 1.03 | 0.009 | 0.001 | 0.009 |
| 1Eating time includes eat up + eat down time on the RumiWatch system | | | | | | | | |
| 2Pre-hension time only includes eat down time on the RumiWatch system | | | | | | | | |
| 3Bite rate is calculated as (number of grazing bites/pre-hension time) | | | | | | | | |
| SEM standard error of the mean for PGHM × PGSH | | | | | | | | |
| a,b,c means within a row with different superscripts differ (P < 0.05) | | | | | | | | |