**SUPPLEMENTAL TABLES**

**Supplemental Table S1.** Multivariable general linear mixed model showing the effect of 3 different regimens of premilking stimulation, stage of lactation, presence of a non-lactating quarter, and somatic cell count from 3 d prior to the start of the study (log10-transformed, logSCC) on milk yield (kg).

|  |  |  |  |
| --- | --- | --- | --- |
| Item1 | ß2 (SE) | *P*-value | LSM (95% CI) |
| Treatment3 |  | 0.43 |  |
| APS80 | 0.31 (0.3) |  | 13.5 (13.1-14.0) |
| APS90 | -0.01 (0.3) |  | 13.2 (12.8-13.7) |
| Control | Referent |  | 13.2 (12.8-13.7) |
| Stage of lactation |  | <0.0001 |  |
| ≤100 DIM | 5.4 (0.3)a |  | 15.8 (15.3-16.3) |
| 101-200 DIM | 3.3 (0.3)b |  | 13.7 (13.3-14.2) |
| >200 DIM | Referentc |  | 10.5 (10.0-10.9) |
| Non-lactating quarter |  | 0.005 |  |
| Present | -1.0 (0.3) |  | 12.8 (12.2-13.5) |
| Absent | Referent |  | 13.8 (13.6-14.1) |
| logSCC | -1.3 (0.2) | <0.0001 | - |

a-cGroups with different superscript letters differ at a level of *P* <0.05 in Tukey-Kramer’s post hoc test.

1Intercept omitted for clarity.

2Linear regression coefficient.

3Cows in the treatment groups (APS80 and APS99) received automated premilking stimulation for a maximum duration of 80 s and 99 s, respectively. Control cows (CON) received conventional premilking stimulation by means of manual forestripping.

**Supplemental Table S2.** Multivariable general linear mixed model showing the effect of 3 different regimens of premilking stimulation, lactation number, and milk yield, on milking unit-on time (s).

|  |  |  |  |
| --- | --- | --- | --- |
| Item1 | ß2 (SE) | *P*-value | LSM (95% CI) |
| Treatment3 |  | 0.57 |  |
| APS80 | -1 (4) |  | 222 (213-231) |
| APS90 | -4 (4) |  | 219 (210-228) |
| Control | Referent |  | 223 (214-232) |
| Lactation number |  | 0.003 |  |
| 1st | -19 (12)ab |  | 212 (189-235) |
| 2nd | -10 (3)a |  | 220 (217-225) |
| ≥3rd | Referentb |  | 231 (227-235) |
| Milk yield (kg) | 9 (0) | <0.0001 | - |

a-bGroups with different superscript letters differ at a level of *P* <0.05 in Tukey-Kramer’s post hoc test.

1Intercept omitted for clarity.

2Linear regression coefficient.

3Cows in the treatment groups (APS80 and APS99) received automated premilking stimulation for a maximum duration of 80 s and 99 s, respectively. Control cows (CON) received conventional premilking stimulation by means of manual forestripping.

**Supplemental Table S3.** Multivariable general linear mixed model showing the effect of 3 different regimens of premilking stimulation, lactation number, and milk yield on peak milk flow rate (kg/min).

|  |  |  |  |
| --- | --- | --- | --- |
| Item1 | ß2 (SE) | *P*-value | LSM (95% CI) |
| Treatment3 |  | 0.31 |  |
| APS80 | 0.0 (0.1) |  | 5.8 (5.4-6.1) |
| APS90 | 0.2 (0.1) |  | 5.9 (5.6-6.3) |
| Control | Referent |  | 5.7 (5.4-6.1) |
| Lactation number |  | 0.03 |  |
| 1st | 0.2 (0.5)ab |  | 5.9 (5.0-6.7) |
| 2nd | 0.3 (0.1)a |  | 5.9 (5.8-6.1) |
| ≥3rd | Referentb |  | 5.6 (5.5-5.8) |
| Milk yield (kg) | 0.1 (0.0) | <0.0001 | - |

a-bGroups with different superscript letters differ at a level of *P* <0.05 in Tukey-Kramer’s post hoc test.

1Intercept omitted for clarity.

2Linear regression coefficient.

3Cows in the treatment groups (APS80 and APS99) received automated premilking stimulation for a maximum duration of 80 s and 99 s, respectively. Control cows (CON) received conventional premilking stimulation by means of manual forestripping.

**Supplemental Table S4.** Multivariable general linear mixed model showing the effect of 3 different regimens of premilking stimulation, milk yield, and their interaction on time spent in low milk flow rate (s).

|  |  |  |  |
| --- | --- | --- | --- |
| Item1 | ß2 (SE) | *P*-value | LSM (95% CI) |
| Treatment3 |  | 0.06 |  |
| APS80 | 0.014 (0.01) |  | - |
| APS90 | -0.017 (0.01) |  | - |
| Control | Referent |  | - |
| Milk yield (kg) | -0.016 (0.00) | <0.0001 | - |
| Treatment × Milk yield (kg) |  | <0.0001 | - |
| APS80 | 0.001 (0.00)a |  | 20 (19-21) |
| APS90 | 0.002 (0.00)ab |  | 19 (19-20) |
| Control | Referentb |  | 18 (18-19) |

a-bGroups with different superscript letters differ at a level of *P* <0.05 in Tukey-Kramer’s post hoc test.

1Intercept omitted for clarity.

2Linear regression coefficient.

3Cows in the treatment groups (APS80 and APS99) received automated premilking stimulation for a maximum duration of 80 s and 99 s, respectively. Control cows (CON) received conventional premilking stimulation by means of manual forestripping.

**Supplemental Table S5.** Multivariable generalized linear mixed model showing the effect of 3 different regimens of premilking stimulation, milk yield, and their interaction on bimodality.

|  |  |  |  |
| --- | --- | --- | --- |
| Item1 | ß2 (SE) | *P*-value | aOR3(95% CI) |
| Treatment4 |  | <0.0001 |  |
| APS80 | -1.28 (0.30) |  | - |
| APS90 | -2.00 (0.30) |  | - |
| Control | Referent |  | - |
| Milk yield (kg) | -0.33 (0.01) | <0.0001 | - |
| Treatment × Milk yield (kg) |  | <0.0001 | - |
| APS80 | 0.12 (0.01) |  | 1.51 (0.95-2.42) |
| APS90 | 0.17 (0.01) |  | 1.41 (0.88-2.26) |
| Control | Referent |  | - |

1Intercept omitted for clarity.

2Linear regression coefficient.

3Adjusted odds ratio.

4Cows in the treatment groups (APS80 and APS99) received automated premilking stimulation for a maximum duration of 80 s and 99 s, respectively. Control cows (CON) received conventional premilking stimulation by means of manual forestripping.