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| **Supplementary Table S2** *Descriptive statistics of potential categorical risk factors for on-farm mortality of beef calves and youngstock in Estonia from 1 January 2013 to 31 December 2015* |
|   |   | **Calves <1 month** | **Calves 1-5 months** | **Youngstock 6-19 months** | **Youngstock ≥20 months** |  |
| Variable | Category | n | MRd | P valuee | n | MRd | P valuee | n | MRd | P valuee | n | MRd | P valuee |  |
| *Animal data* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Beef breed bloodnessa | <90% | 10 225 | 28.3 | 0.131 | 10 475 | 2.66 | 0.162 | 11 813 | 1.5 | 0.267 | 5 605 | 2.5 | 0.073 |  |
|  | ≥90% | 10 850 | 20.8 |  | 10 641 | 3.20 |  | 10 824 | 1.7 |  | 3 977 | 1.2 |  |  |
| Breeda | Aberdeen Angus | 4 813 | 30.7 | 0.116 | 4 749 | 4.7 | 0.036 | 5 103 | 1.7 | 0.339 | 2 216 | 2.5 | 0.630 |  |
|  | Charolais | 1 891 | 21.3 |  | 1 687 | 2.1 |  | 1 726 | 1.4 |  | 778 | 2.0 |  |  |
|  | Hereford | 3 621 | 20.3 |  | 3 704 | 1.7 |  | 4 045 | 1.5 |  | 1 662 | 1.5 |  |  |
|  | Limousin | 5 224 | 28.6 |  | 5 293 | 3.6 |  | 5 660 | 1.3 |  | 2 532 | 1.8 |  |  |
|  | Simmental | 3 461 | 19.4 |  | 3 614 | 2.2 |  | 3 547 | 1.9 |  | 1 050 | 2.6 |  |  |
|  | Otherf | 2 065 | 17.8 |  | 2 069 | 1.4 |  | 2 556 | 1.6 |  | 1 344 | 1.4 |  |  |
| Dystociaa | No | 20 416 | 24.2 | 0.004 | 20 483 | 2.9 | 0.432 | 21 904 | 1.5 | 0.234 | 9 230 | 1.9 | 0.230 |  |
|  | Yes | 659 | 32.1 |  | 633 | 2.9 |  | 733 | 1.9 |  | 352 | 3.2 |  |  |
| Parity of the mothera | First | 5 118 | 22.5 | 0.001 | 5 237 | 4.5 | 0.005 | 5 878 | 2.0 | 0.207 | 2 912 | 2.1 | 0.868 |  |
|  | Second | 4 698 | 25.7 |  | 4 627 | 3.3 |  | 4 821 | 1.4 |  | 2 026 | 2.1 |  |  |
|  | Third | 3 554 | 20.1 |  | 3 546 | 2.0 |  | 3 699 | 1.6 |  | 1 543 | 2.0 |  |  |
|  | Fourth | 2 509 | 25.1 |  | 2 525 | 2.0 |  | 2 711 | 1.3 |  | 1 100 | 1.5 |  |  |
|  | ≥Fifth | 5 196 | 27.8 |  | 5 180 | 2.1 |  | 5 528 | 1.2 |  | 2 001 | 1.5 |  |  |
| Purchaseb | No | 20 897 | 24.7 | 0.995 | 20 748 | 3.0 | 0.998 | 21 572 | 1.6 | 0.577 | 8 467 | 2.0 | 0.658 |  |
|  | Yes | 265 | 0.00 |  | 632 | 0.0 |  | 1 772 | 1.1 |  | 1 228 | 1.3 |  |  |
| Season at birtha | Summer (Jun-Jul-Aug) | 4 466 | 10.6 | <0.001 | 4 945 | 2.1 | <0.001 | 4 819 | 2.1 | 0.076 | 1 902 | 2.9 | 0.099 |  |
|  | Autumn (Sep-Oct-Nov) | 2 273 | 26.3 |  | 2 701 | 4.9 |  | 1 998 | 1.7 |  | 935 | 2.9 |  |  |
|  | Winter (Dec-Jan-Feb) | 2 548 | 37.1 |  | 2 162 | 6.0 |  | 2 422 | 1.7 |  | 1 257 | 2.1 |  |  |
|  | Spring (Mar-Apr-May) | 11 788 | 26.9 |  | 11 308 | 2.3 |  | 13 398 | 1.3 |  | 5 488 | 1.3 |  |  |
| Sexa | Female | 9 710 | 23.8 | 0.409 | 9 762 | 3.0 | 0.622 | 10 913 | 1.3 | 0.043 | 6 242 | 1.5 | 0.002 |  |
|  | Male | 11 365 | 25.0 |  | 11 354 | 2.9 |  | 11 724 | 1.8 |  | 3 340 | 2.9 |  |  |
| Single/twina | Single | 20 181 | 23.4 | <0.001 | 20 281 | 2.9 | 0.897 | 21 838 | 1.5 | 0.704 | 9 304 | 1.9 | 0.242 |  |
|  | Twin/triplet | 894 | 47.0 |  | 835 | 3.0 |  | 799 | 1.3 |  | 278 | 2.8 |  |  |
| Yearc | 2013 | 6 213 | 27.4 | 0.054 | 6 918 | 3.4 | 0.196 | 10 047 | 1.8 | 0.051 | 4 341 | 2.9 | 0.002 |  |
|  | 2014 | 7 619 | 27.8 |  | 8 424 | 3.1 |  | 12 357 | 1.6 |  | 4 910 | 1.8 |  |  |
|  | 2015 | 7 745 | 18.6 |  | 8 721 | 2.4 |  | 12 269 | 1.2 |  | 5 015 | 1.1 |  |  |
| *Farm data* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Change of herd size in cow-years from 2013 to 2015b | No change (+/- 5%) | 3 001 | 11.0 | 0.218 | 3 163 | 1.7 | 0.231 | 3 608 | 2.1 | 0.864 | 1 755 | 2.3 | 0.621 |  |
| Decrease >5 to 15% | 1 619 | 14.2 |  | 1 640 | 2.9 |  | 1 885 | 1.2 |  | 705 | 1.7 |  |  |
| Decrease >15% | 3 737 | 56.2 |  | 3 691 | 5.1 |  | 4 111 | 1.6 |  | 1 632 | 0.8 |  |  |
|  | Increase >5 to 15% | 2 198 | 32.0 |  | 2 393 | 2.5 |  | 2 662 | 1.4 |  | 1 047 | 1.5 |  |  |
|  | Increase >15% | 10 607 | 17.3 |  | 10 493 | 2.7 |  | 11 078 | 1.4 |  | 4 556 | 2.3 |  |  |
| Regionbg | North-East | 6 672 | 36.0 | 0.172 | 6 774 | 4.3 | 0.044 | 7 103 | 2.2 | 0.294 | 2 435 | 2.0 | 0.355 |  |
|  | South-East | 3 295 | 22.0 |  | 3 485 | 2.9 |  | 3 670 | 0.9 |  | 1 522 | 0.5 |  |  |
|  | South-West | 4 637 | 15.2 |  | 4 682 | 1.4 |  | 5 200 | 1.3 |  | 2 336 | 1.8 |  |  |
|   | North-West | 6 558 | 20.5 |   | 6 439 | 2.8 |   | 7 371 | 1.5 |   | 3 402 | 2.4 |   |  |
| anumber of animals |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| bnumber of observations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| cnumber of observations after splitting the observation period at 1st of January 2013, 2014 and 2015 |  |
| dMortality rate (per 100 animal-years) in each category |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ep-value estimated in univariable Cox proportional hazard model with herd random effect |  |  |  |  |  |  |  |  |  |  |
| fother breeds: Estonian Holstein, Estonian Red, Aubrac, Blonde d'Aquitaine, Belgian Blue, Estonian Native, Galloway, Scottish Highland, Piemontese, Tyrolean Grey, Salers, Danish Red |  |  |
| gNortheast Estonia: Ida-Viru, Lääne-Viru, Jõgeva, Järva county; Southeast Estonia: Tartu, Valga, Võru, Põlva county; Southwest Estonia: Pärnu, Viljandi, Saare county; Northwest Estonia: Harju, Rapla, Lääne, Hiiu county |  |
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