*Supplementary Table S1* Ingredients and chemical composition of the diet supplied to the animals in the farms involved in the present study.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **CMC** |  | **OMC** | |
|  |  | **Farm A** | **Farm B** |
| Total dry matter offered |  | 21.7 |  | 15.64 | 15.49 |
| Diet composition (kg DM/cow per day)1 | | | | | |
| Ryegrass hay |  | ‑ |  | 1.90 | ‑ |
| Alfalfa hay |  | ‑ |  | 1.88 | ‑ |
| Corn flour |  | ‑ |  | 1.84 | ‑ |
| Grass (in pasture) |  | ‑ |  | 6.23 | 1.31 |
| Corn silage |  | 5.1 |  | ‑ | 3.39 |
| Grass silage |  | 4.8 |  | ‑ | 6.19 |
| Concentrate2 |  | 11.6 |  | 3.79 | 4.6 |
| Vitamin/mineral premix3, 4 |  | 0.2 |  | ‑ | ‑ |
| Nutrient analysis | | | | | |
| Dry matter (%) |  | 47.3 |  | 32.6 | 43.1 |
| Crude protein (% DM) |  | 17.8 |  | 12.7 | 11.4 |
| Neutral detergent fibre (% DM) |  | 30.6 |  | 38.0 | 40.2 |
| Acid detergent fibre (% DM) |  | 16.4 |  | 22.9 | 25.0 |
| Starch (% DM) |  | 31.2 |  | 16.20 | 14.90 |
| Ether extract content (% DM) |  | 4.4 |  | 3.0 | 2.6 |
| Ashes (% DM) |  | 7.3 |  | 7.2 | 5.9 |
| PDIE (g/kg DM) |  | 133.5 |  | 87.2 | 84.0 |
| PDIN (g/kg DM) |  | 130.9 |  | 84.3 | 77.8 |
| Feed units milk (UFL/kg DM) |  | 0.94 |  | 0.93 | 0.86 |

CMC: Conventionally managed cattle. OMC: Organically managed cattle. DM: dry matter; PDIE: protein supplied when energy is limited in the rumen; PDIN: protein supplied when nitrogen is limited in the rumen. UFL: ‘Unité Fouragère Lait’. UFL is the net energy for lactation equivalent to 1 kg standard air-dried barley.’

1 The diet was fed as a total mixed ration and OMC animals have grazed *ad libitum* in pastures for 7 h/day. The amount of grass ingested was estimated according to [INRA (2007)](#_ENREF_5). All the components of the diet of OMC farms fulfilled the requirements for their use in organic production under the European legislation ([European Commission, 2008](#_ENREF_4)). There were no differences among farms on how the ration was offered at the barn. The three farms had only one feeding group, with restricted access to the feedbunk for dry cows only after every milking of lactating cows. Diets were formulated by bovine nutritionists using feedstuffs commonly used in the Spanish dairy system ([Calsamiglia *et al.*, 2004](#_ENREF_3), [Blas *et al.*, 2010](#_ENREF_2)).

2 Concentrate composition (% as fed): **CMC Farm:** rapeseed meal (26.2), corn (20.0), wheat DDGs (15.9), soybean meal (11.5), calcium soap (3.2), sugarcane (1.6), bicarbonate (1.6), calcium carbonate (0.9) and sodium chloride (0.8). **OMC** **Farm A:** barley (29.1); soybean meal (16.2), corn (15.0), peas protein concentrate (15.0), oat (10.0), wheat (10.0), sodium bicarbonate (1.0), calcium carbonate (1.7) monocalcium phosphate (1.0) and sodium chloride (0.6). **OMC** **Farm B:** barley (20.0), wheat (20.0), pea’s protein concentrate (15.0), soybean expeller (10.5), oat (10%), calcium carbonate (1.8), sodium bicarbonate (1.0), monocalcium phosphate (0.7), sodium chloride (0.6), other minerals (0.4).

3 Contained: 14% Ca, 4% P, 6% Na, 5% Mg, 650000 IU/kg vitamin A, 130000 IU/kg vitamin D3, 2600 IU/kg vitamin E, 9700 ppm Zn (oxide), 8100 ppm Mn, 8100 ppm Fe, 2000ppm Cu, 100ppm I, 40 ppm Cu, 40 ppm Se and 30 ppm Mo.

4 CMC received 15 days before expected parturition date a vitamin complex injection (Hipravit-AD3E-Forte® Hipra Laboratories, Girona, Spain) at a dose of 0.10 mL/kg BW, containing each mL 75000 IU of cholecalciferol, 50 mg of α-tocopherol acetate and 500000 IU of vitamin A.

**The data from the diet of CMC was already reported in the study by** [**Abuelo *et al.* (2013)**](#_ENREF_1) **and reprinted here with permission of the publisher.**

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