

Supplementary material (S1)

Four data sets used to analyse MA animal performances

Dataset 1 consisted of on-farm comparisons of the performance of MA and Charolais (CH) breeds, managed in the same way and with the same number of animals. Measurements were made over 6 years (2000 to 2005) on 4 experimental groups of 15 cows, with a 2x2 factorial combination of breed (MA and CH) and the wintering strategy (housed and free-range) and another 4 experimental groups of 5 steers with only the breed factor (MA and CH). All animals grazed on wet grasslands from April to July, were supplemented with hay from mid-July to November in pasture and fed with natural grassland hay during winter time, except for the 3-year-old steers, which received 5 kg of concentrates in addition to hay during the 90-day finishing period. Spring calving was used to favour the utilisation of grass in semi-natural pastures.

Dataset 2 was collated from the assessment of MA animals on-farm from 2009 to 2021. During this period, there was only one MA herd on the farm and two calving periods (Spring and Autumn) to spread animal sales over the year. The adult animals were fed with hay from semi-natural grasslands and with other forages including mixed cereals-legumes or temporary grassland silage bales. Animals were supplemented with cereals grown on the farm. Calves were only fed with milk supplemented with hay in winter or grazing in summer and made up a substantial proportion of the farm's direct sales. We used the dataset 'Yield of bovine carcasses' [36] which gives carcasses yield for different cattle breeds to position the MA breed.

Dataset 3 was collated from an experiment conducted from 2018 to 2020 to evaluate milk production of autumn-calving MA cows. Milk production was assessed by weighing the calves before and after suckling. One weighing was done in the morning, the other in the evening. This was done throughout the lactation period. The data covers three years of measurements. Cows were fed with hay from semi-natural grasslands ad libitum, 6 kg of lucerne hay and 2 kg of cereals.

Dataset 4 comprises data on nutritional and sensory characteristics of on-farm steer MA and CH meat provided by measurements on muscle samples (*Rectus abdominis*) on the group of 4 animals that were part of dataset 1.

Datasets 1 to 3 were produced on an experimental farm (INRAE, DSLP, F-17450, Saint Laurent de la Prée, France). It is located in Charentais marshlands. It is rearing a beef cattle using natural wet grasslands. It owned a Charolaise herd since 1984 to 2008 and a Maraichine herd since 1995. This enabled to study Maraichine traits comparing it to the Charolais breed in the same livestock farming system.