and high (L3, 603 ± 29.7 min/d, $n = 13$). Individual milk yield was automatically recorded at each milking. Milk samples from 16 Italian Friesian cows (8 primiparous and 8 pluriparous) were weekly tested for composition and cheese-making properties. Data were analysed according to a general linear model where each dependent variable was tested for the fixed effects of DRT (L1, L2, and L3), AFM settings (A and B), and periods within them.
The AFM setting did not affect individual DRT nor MY. Milk pH, clotting time, curd firming rate, and final curd firmness on the 16 sampled cows did not differ between A and B settings, with only a trend ($p = 0.068$) for a lower fat content for B. The cheese-making features were also unaffected by DRT level; however, MY was higher ($p = 0.032$) in L2 than L1 cows. Throughout the study, DRT was still higher in L2 and L3 than L1 cows ($p < 0.05$); its level affected milk fat content (lower in L2 and L3 than L1, $p < 0.05$) and fat yield (lower in L3 than L1; $p = 0.027$). These results confirm that a good rumen activity at the beginning of a stressful period can help to cope with it; on the contrary, the tested AFM settings did not allow to reduce the negative effect of heat stress on DRT and MY. Further study will be necessary to really exploit the opportunities offered by the different AFM systems in managing critical summer situation in dairy herds.

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O458

Animal breeding sustainability: the Italian Holstein experience

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To increase the environmental sustainability of the dairy sector a holistic approach is needed. Methane and carbon dioxide emissions have been shown to be heritable in cattle, providing the basis to apply genetic selection for their reduction. For this reason, the Italian Association of Holstein, Brown and Jersey breeders (ANAFIBJ) is working on data collection of innovative phenotypes and, in the future, to set-up routine recording in commercial dairy farms. Since 2018 ANAFIBJ, has started to record GHG data on young genotyped Italian Holstein bulls passing into the Genetic Center. For this purpose, the GreenFeed system (C-Lock Inc., Rapid City, SD) has been installed and used. In three years, a dataset of more than 11,200 phenotypic records collected on more than 200 young bulls has been set-up. Preliminary analyses showed that animals emit 223,6 g of CH4/d with a heritability (h2) of 0.396. Thanks to this experience ANAFIBJ has the intention to contribute further and set up a routine recording system for these phenotypes implementing experimental protocols to apply in commercial farms. For this purpose, Laser Methane Detector Mini (LMD, Crowcon, Abingdon, UK) is currently being tested at ANAFIBJ Genetic Center and a data collection protocol is under investigation. Once a standard protocol will be defined, individual CH4 emissions will be collected in 3000 genotyped Italian Holstein dairy cows (some of them daughters of the young bulls recorded at the Genetic Center) distributed in 100 commercial farms throughout the country. At the Genetic Center, in addition, several phenotypes will be collected in order to better define the GHG data emission. Main biometric measures will be recorded and samples of ruminal fluid and faeces will be collected. Biological samples will be frozen and stored at −80 °C, until instrumental and bioinformatic analysis. Activities in commercial farms and in experimental stations will allow to study the interaction between host and environmental microbiome, and to evaluate the reliability of faeces as a proxy of rumen sample. Furthermore, it will be possible to estimate the genetic parameters and to develop models for genetic and genomic evaluations of methane emissions.

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O424

Expectation from precision livestock farming (PLF) in reducing environmental impact of dairy farms

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Livestock productions must be profitable and environmentally sustainable, and it must assure the optimal animal's health and welfare.
Precision livestock farming (PLF) offers the opportunity to improve the efficiency in resource use. It allows to monitor in real-time a wide series of parameters regarding animals and farm, like feed intake, animal welfare, rumination rate, behaviour, oestrus, energy consumption, environment conditions and