makes its seeds particularly used during the lactation stage. In our trial, 20 pluriparous Cilentana goats homogeneous for body weight (BW: 50 ± 2 kg), parity (3rd) and milk yield in the previous lactation (1450 ± 120 g/head/day), immediately after kidding (first week of March 2022) were equally divided into two groups (C: control; F: fennel) fed on a permanent pasture (9:00 am to 4:00 pm). In the pen both groups received 400 g of concentrate mixture composed by barley and corn meals (50/50) (CP: 100,4 g/kg; EE: 31,6 g/kg; UFL/kg: 1,06) and group F diet was supplemented with 15 g/head/day of organic dried fennel seeds (procured by Biokyma© S.r.l) mixed with concentrate mixture at the time of administration. By the beginning of May, milk yield was daily measured while samples of milk and pasture were monthly collected up to September, and analysed, as well as concentrate samples, for chemical composition. Data were analysed using the two-way ANOVA with JMP software (version 11, PROC GLM, SAS 2000). According to previous trials using fennel seeds, milk yield was significantly higher in group F (1809.59 g vs 1418.27 g for group F and C respectively; $p < 0.001$), probably due to the high content of anethole in the fennel seeds. The anethole has estrogenic properties thus able to stimulate the prolactin secretion. In contrast, no differences were observed for fat (C: 4,27% vs F:4,01%), protein (C: 2,93% vs F: 2,88%) and lactose (C: 4,25% vs F: 4,13%) content. However, the investigation on other possible effects that such integration may have on milk quality (i.e. aromatic and fatty acid profile) are in progress. In conclusion, this result is particularly interesting since goat milk in this area is mainly intended for cheese making, therefore a strategy which allows to increase animal performances without the 'dilution effect' could be advantageous.

O93

Cashew (*Anacardium occidentale* L.) apple by-products: a promising feed in animal nutrition

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Cashew is a tree from tropical and sub-tropical areas. Native to tropical America, it was introduced in several countries of Asia, Africa, and Central America as an economically important agricultural crop. The nuts are the first interest of cashew production, while the apples are wasted as by-products. One ton of nuts produced is lead to 10–15 tons of apples as by-products. According to this estimation, about 61.13 million tons of apples are generated every year and only 10% of them are transformed into juice, vinegar, jam, chutney, or soft drinks. The valorization of cashew apples in animal nutrition could contain the environmental impact and provide a supplement to the animals, especially during the dry season when feed resources are limited. This study aimed to assess the nutritional characteristics of cashew apple by-products as feed for ruminants. To achieve this aim cashew by-products led the processing technic (whole, up part, down part, middle part, and pulp) were collected regarding the variety (yellow and red) and cultivation areas (Sudanian and Guinea) in Benin Republic. In total of 20 samples (5 parts/variety (red vs yellow) in 2 cultivations areas) were analyzed in terms of chemical composition using AOAC procedures: dry matter (DM), crude protein (CP), ether extract (EE), ash, and Neutral Detergent Fiber (NDF). In addition, the total (TS) and free sugars (FS) content were also quantified in the whole apple and pulp. The *t*-test and Tukey's HSD test were applied to all data using JMP software with the following model: $Y_{ijk} = U + Z_i + V_j + P_k + (V*P)_{jk} + {}_{ijk}$. The results showed a significant ($p < 0.01$) difference between the areas for most of chemical parameters except for the sugar content. All by-products resulted low in DM (between 10 and 24% a.f.) highlighting the conservation issue. The highest CP, EE and NDF content was found in the pulp (11.7, 4.40 and 32.9% DM, respectively; $p < 0.001$). The up, middle, and whole parts reported the highest ($p < 0.01$) of non-structural carbohydrates (NSC); in particular, the results of the analysis showed that the whole cashew apples are richer ($p < 0.01$) in TS and FS than the pulp. Considering the interaction varieties and parts of by-products, all parameters were statistically different. The results suggest apple pulp as the best by-product from cashew production to be considered in animal nutrition. Further investigations need to be performed; the study of *in vitro* fermentation characteristics is still in progress.

O133

Automation to support rationing of dairy and beef cattle: comparisons and practical examples of application

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Getting a balanced ration delivered to and consumed by cows is fraught with mechanical and human error risks. Animal feeding requires skill and attention to detail to deliver a high-quality, uniform ration to all cows.
Technology, even more automation, provides valuable support to the farmer in preparing the ration.
This research has analysed three kinds of farms in upper Po valley, with Freisan Holsteins cows, equipped or not with technologies supporting cattle rationing (conventional mixing wagon, an optical sensor for image analysis, automatic feeding systems – AFS) to point out the step forward such technologies provide to animal farmers. Comparisons occurred evaluating the TMR samples before and immediately after the distribution (before animal feed sorting) using the Penn State Particle Separator. In addition, the average length of the fibres retained by the first sieve (>19 mm diameter) was also assessed, together with the effect of the filling level of the mixing wagon. The data collected during the monitoring underwent processing using the general linear model multivariate procedure followed by Tukey's test for post hoc multiple comparisons.
According to the results, using an optical sensor or an AFS resulted in a slight but significant lengthening of the ration fibre compared to conventional mixing wagon technology (5.7 ± 2.7 cm and 5.6 ± 2.2 cm vs 4.8 ± 2.4 cm).
Compared to a conventional mixing wagon, image analysis in supporting TMR preparation results in a ration granulometry that does not differ from that of an expert operator.
The TMR from AFS is coarser than that from a conventional mixing wagon due to the reduced volume of the mixing container. This aspect was confirmed by studying the effect of the level of the mixing of the conventional mixing wagon: the mixing wagon filled fully results in a more refined TMR texture.
In conclusion, it can be stated that technology provides proper support in the preparation of the ration, also providing help to less expert operators, avoiding daily alterations of the unifeed with consequent metabolic and production problems in the cattle.

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O281

Effect of feeding enriched-olive cake on metabolic and milk performance response of mid-lactating Holstein cows

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The use of olive cake (OC) as animal feed is an interesting and sustainable alternative to its disposal, because it may decrease the costs associated with animal feeding, valorizing a by-product and at the same time improving the quality of the products. However, a limited number of studies have evaluated the effect of processed OC on metabolism and performance of dairy cows. Thus, the aim of this study was to assess the effects of adding dried enriched-OC with leaves and olive wastewater in the concentrate of mid-lactating Holstein cows on metabolic profile, rumen fermentations, and milk performance. A total of 20 cows were allocated, according to days in milking, parity, and milk yield, into 1 of 2 dietary isoenergetic and isonitrogenous treatments: control group (CTR) was fed a conventional concentrate, whereas treated group (EOC) was fed a concentrate with 7% of OC integration during 28-d experimental period. Blood and milk samples were collected at 0 and 28 d (end of period) together with rumen liquid samples. Data were analyzed with the proc GLIMMIX of SAS. Compared with CTR, cows of EOC group showed lower milk protein (3.31 vs. 3.14 ± 0.06%; $p = 0.01$), lactose (tendency; 5.0 vs. 4.95 ± 0.03%; $p = 0.06$). Cows in EOC group had greater ($p < 0.05$) blood cholesterol (6.54 vs. 5.91 ± 0.1 mmol/L), P (2.73 vs. 2.47 ± 0.08 mmol/L), Zn (9.96 vs. 8.70 ± 0.5 mmol/L), FRAP (163 vs. 154 ± 5 µmol/L), ROM (13.1 vs. 12.1 ± 0.5 mg of H_2O_2/0.1 dL), and AOPP (32.6 vs. 29.1 ± 1.5 µmol/L), but lower ($p < 0.05$) glucose (3.7 vs. 3.9 ± 0.1 mmol/L), albumin (35.6 vs. 36.2 ± 0.3 g/L), ALP (68.3 vs. 72.9 ± 2.2 U/L), and creatinine (81.3 vs. 84.3 ± 1 µmol/L) compared with CTR cows at 28 d. A tendency for lower rumen butyrate in OC compared with CTR cows was also obtained (11.65 vs. 13.78 ± 0.77 mmol/L; $p = 0.06$). These results suggest that OC integration at 7% in the concentrate does not affect milk yield, but milk protein and lactose due likely to the higher low-degradable fiber content of OC which in turn decrease protein and energy metabolism in the rumen (lower rumen butyrate and blood glucose). However, OC positively modulated the liver metabolism and inflammatory response, but further research is needed to evaluate the response of the oxidative status (greater ROMt and AOPP) which was unexpected since OC brings a high amount of polyphenols content.