

informative. Aim of our study was to investigate the causes of mortality in a cohort of dairy cattle in a Region of northern Italy (Piedmont). **Materials and methods:** The 'typical farm' was firstly identified by means of a descriptive analysis (i.e. by breeder association registration, herd size) of dairy farms active in Piedmont during the year 2011. A cohort of farms, stratified by province, was enrolled following predetermined inclusion criteria (breeders associates, herd size over 19 heads, willing to be involved in the project). Every calf, veal or cow died or euthanized during the period 01/04/2012-31/03/2015 was sent to post-mortem examination and ancillary diagnostics to identify the cause of death. Finally crude and age specific mortality rates (3 classes: 0-6 months, 7-24 months, >24 months) was obtained and the proportion of cause of death was calculated for each age-class. Data on denominators were drawn from the National Cattle Registry that suffers from an intrinsic underestimation of less than 15 days calves. **Results:** During the study period 15,289 cows (18,051.8 cow-years), belonging to 44 farms, were enrolled in our study. Crude mortality rate was 3.4/100 cattle-years (CI95% 3.2-3.7). The highest mortality rate was seen in the first age class (17/100 cattle-years, IC95% 15-19), mostly due to digestive disorders (43%), the lowest mortality rate in the second age class (0.9/100 cow-years, IC 95% 0.7-1.2) in part due to respiratory (37%) and digestive disorders (37%) while in adult animals mortality (2.9/100 cattle-years, IC95% 2.6-3.3) was mainly caused by digestive disorders (43%). **Conclusions:** Our crude rates referred to all causes mortality are consistent with national data. Mortality in the first age class could be overestimated: our effort to obtain a complete numerator may have faced an underestimation of the denominator. The proportion of digestive disorders in adults is higher than reported in literature, most of our cases are due to *Cl. perfringens*. Currently within an international group, we are developing a classification system of the cause-specific mortality to be shared in order to allow international comparisons of bovine mortality data.

## 215. Cystic echinococcosis: risk factors of infection in human and animals (Case study: Province of Sidi Kacem, Morocco)

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### ABSTRACT

A part of a large research project on five major neglected zoonotic diseases, ICONZ (Integrated Control of Neglected Zoonoses), including Cystic echinococcosis (CE), this study was undertaken in the Province of Sidi Kacem (North/west of Morocco) during a period of four years (April 2009-March 2013). The main objectives were to determine the importance of Echinococcus granulosus (Eg) sources (CE prevalence of infection in ruminants and Eg prevalence of infection dogs), to identify the Eg's main strains present in the region, to evaluate the community knowledge on the disease and to identify the dynamic of transmission to ruminants, dogs and human. The prevalence of infection in ruminants determined by post-mortem examination, of a total of 2,090 farm animals (1,302 sheep, 652 cattle, and 136 goats), carried out in the 10 abattoirs of the Province, the prevalence of infection in dogs was determined using bromhydrate arecoline purgation, while the evaluation of the community knowledge on the disease was carried out using a large-scale questionnaire survey undertaken at the population level in a total of 27 communes of the Province. Results showed a CE prevalence of 11%, 43% and 1.5%, respectively in sheep, cattle and goats. In dogs, the Eg prevalence of infection was 35.5%. Eg strain typing of a sample of 116 cysts revealed the presence, for the first time in Morocco, of G1 and G3 stains. Otherwise, surveys showed that 88.7% of respondents ignore the dog's role in disease transmission, whereas 39% allow their guard or sheep dogs to access to the family home including sometimes kitchen, and 54.3% feed them infected and inappropriate for human consumption organs. Furthermore, 61.2% of children do not wash their hands after petting or playing with dogs, 88.2% consume raw vegetables, and 68.9% of households still use traditional water sources. Thereby, it appears that CE is highly endemic in Sidi Kacem region. This zoonosis remains a major public health issue in Morocco and hence, the necessity for increased monitoring and global control of CE in the country.

## 216. Effect of dietary supplementation of layer pullets with a botanical additive on the growth performance, mortality, uniformity and caecal microflora

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### ABSTRACT

Hy-Line W-36 is well known as one of the most efficient egg producing strains all over the world. However, it is hard for poultry producers to achieve the desired performance and uniformity goals among flocks due to their low feed consumption in comparison to other strains. Botanical feed additives have gained much attention in the last decade due to their natural growth promoting properties. A field trial was conducted to investigate the influence of supplementing pullet diets with a botanical blend containing carvacrol, cinnamaldehyde, and capsi-cum oleoresin on the growth performance (average body weight (ABW), average daily gain (ADG), average daily feed intake (ADFI) and feed conversion ratio (FCR)), mortality, uniformity, and caecal bacterial count. A total of 60000 Hy-Line W-36 pullets were used in this trial from 2-12 weeks of age. The trial involved two dietary treatments. The number of birds per treatment was 30000 chicks divided into three replicate each containing 10000 chicks. Pullets of the first treatment were fed on a basal diet and kept as a control, while those of the second treatment were fed on a basal diet supplemented by 75 ppm of a botanical additive (Xtract, Pancosma Company, Switzerland). The feeding program involved three phases (starters 1 (2 to 4 wk); starter 2 (5 to 8 wk), grower (9 to 12 wk)). The bird's body weight and feed consumption were recorded on a weekly basis to determine the ABW, ADG, ADFI, and FCR. A total of 300 pullets (selected to represent different locations of the barn) per treatment were individually weighed. Mortality and uniformity were also estimated on a weekly basis. At the trial end, the left caeca of 30 birds per treatment were collected and used for examination and counting of caecal coliform and lactobacilli bacteria. The results were statistically analyzed via one way ANOVA using Statistix 9.0. The obtained results revealed that dietary supplementation of Hy-Line pullets with Xtract didn't result in significant difference in the overall ABD, ADG, ADFI, or FCR. However, the FCR was significantly lowered by 9.6 and 4.4% during 7 to 8 and 9 to 10 wks of age respectively in pullets fed on the Xtract diets. Mortality %, uniformity %, and lactobacilli count were not significantly differed among treatments. The caecal coliform count was significantly lowered by 27% in pullets fed the Xtract supplemented diet. It could be recommended to utilize higher levels of Xtract additive for delivering a better response.

## 217. Seroprevalence of *Toxoplasma gondii* in game ungulates as indicator of foodborne zoonoses risk

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### ABSTRACT

**Objectives:** The protozoan *Toxoplasma gondii* is the most spread among parasitic zoonoses, and the consumption of raw or undercooked meat have been shown to be one of the main risk factor for human infection. *T. gondii* can infect many animal species and, among intermediate hosts, several ungulates are reported and may be source of infection for consumers, hunters and slaughterers (manipulation and handling of carcasses). Therefore, we performed a serological analysis in chamois (*Rupicapra r. rupicapra*), roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*) and mouflon (*Ovis musimon*), which represent the most consumed game meat in the Alps, in order to evaluate the potential foodborne zoonotic risk. **Material and methods:** Sera of game ungulates were gathered from two areas of Central-West Italian Alps. Overall 91 chamois, 74 roe deer and 63 red deer sera were sampled from area 1 (VB) during three hunting seasons (2011-2013) while 66 chamois, 44 roe deer, 25 red deer and 13 mouflon were sampled in area 2 (VC) during two hunting seasons (2013-

2014). For each subject age, gender and the shooting localities were registered. Sera were tested by a commercial ELISA kit and data were analysed through Generalized Linear Models. **Results:** Prevalence of area 1 were 3.3% in chamois, 24.3% in roe deer and 17.4% in red deer. Deer resulted significantly more infected than chamois. No significant effects of gender, age class, shooting localities and year were recorded on the probability of being positive. Prevalence of area 2 were 4.5% in chamois, 13.6% in roe deer, 8% in red deer and 46% in mouflon. Mouflon resulted significantly more infested than chamois. No other significant effects were recorded. **Conclusions:** The emerged seropositivities proves the presence of *T. gondii* in both study areas, in all the host species. Thus a wide spread of the protozoan in the Alpine ecosystem appears. As the contamination of pastures by cats' oocysts is the more likely transmission route, even if the transplacental one can not be excluded, the remote habitat-use of chamois could explain its lower infection than both deer and mouflon. Concerning zoonotic risk, mouflon and deer appear a more likely source of *T. gondii* infection for humans than chamois, although the risk associated with the consumption of its raw or undercooked meat or handling of its infected carcasses can not be completely excluded.

## 218. Tackling chronic fear in sheep through genetic selection

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### ABSTRACT

Chronic fear in sheep has been defined as a welfare consequence in the EFSA Journal 2014(12):3933. With previous investigations outlining the influence that behavioural reactivity has on productive and reproductive performance in sheep. Moreover, animals which are highly reactive to humans and handling exhibit poor adaptation to their environment and experience high levels of stress, reducing their level of welfare. The objectives of the current research were: i) to evaluate the effects that behavioural reactivity has on production performance of sheep reared for meat production; ii) to estimate the heritability of temperament in Dorper breed; iii) with the ultimate purpose, to test the feasibility and reliability of introducing new 'green' selection traits such as temperament into commercial breeding of sheep in order to improve animal welfare. A data-set from 161 Dorper sheep (72 ewes, 86 lambs and their sires) managed under semi-intensive production system, and more than 720 records was analysed for estimation of the genetic parameters for temperament and correlations of behavioral reactivity with production traits. Temperament of the animals was evaluated based on a subjective method, using a 5-points scoring system at weighting, while spending 30 s on the scale ('scale' test, described by Dodd et al. 2012 Appl. Anim. Behav. Sci. 140:1–15). The heritability ( $\pm$ SEM) of temperament in Dorper breed was found to be low ( $0.10 \pm 0.03$ ). Significant negative phenotypic ( $r_p = -0.40$ ,  $p \leq 0.05$ ) and genetic ( $r_g = -0.44$ ,  $p \leq 0.01$ ) correlations were found between ewe temperament and body weight, thus, the more reactive the ewe the lower its body weight. Correlations between temperament and litter size in ewes were negative and negligible ( $p > 0.05$ ). Significant genetic correlations were found between lamb temperament and pre-weaning growth rates ( $r_g = -0.44 \pm 0.07$ ,  $p \leq 0.05$ ) and post-weaning growth till the age of 120 days ( $r_g = -0.52 \pm 0.08$ ,  $p \leq 0.05$ ). Thus, selection for calmer animals will have a positive impact on lambs' growth rates during first three months of life, and vice versa. Negative correlations between temperament and production traits, in both ewes and lambs, suggest that selection against animals that are highly reactive in order to improve animal welfare and ease of handling would not have detrimental impacts on productivity in sheep reared for meat.

## 219. A new pest in vineyards: Approaches to sustainable management to support indigenous people's ethics

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### ABSTRACT

Global agriculture has been increasing the yields of several crops, by using agrochemicals. Amongst them, pesticides produced several side-effects such as, insect acquired resistance, environmental degradation and human health problems. To promote sustainable agriculture, important efforts have been made during the last 30 years to find alternatives to pest control, which include habitat manipulation, biological control and use of alternative products to broad-spectrum insecticides, such as plant extracts, natural oils and feeding deterrents. Adults of the grass grub *Costelytra zealandica* (Coleoptera: Melolonthinae) hover and land on vine plants, producing severe damage to vine leaves (<http://bioprotection.org.nz/news/grass-grub-beetle-invasion-captured-camera>). Kono Beverages has strong ethical concerns about nature conservation, rooted on their Maori (New Zealand's indigenous people) cultural heritage based on kaitiakitanga which is the spiritual consideration of protecting the land for descendants. This encourages the search for sustainable solutions for this pest problem without the use of synthetic pesticides. Here, we investigated the distribution of adult grass grub within vineyard blocks and the use of feeding deterrents such as kaolin particle films and diatomaceous earths in a Kono vineyard in the Awatere Valley, Marlborough, New Zealand. The feeding deterrents were applied at a rate of 400 L ha<sup>-1</sup> (20 g L<sup>-1</sup>), sprayed onto the vine foliage in a randomized block design. A generalized linear model (GLM) was used to analyze the data (link=log; family=Quasi-binomial). The adults' distribution within vineyard blocks was assessed by counting and removing the *C. zealandica* adults after they landed on vine plants, and this was analyzed by a GLM (link=log; family=Quasi-Poisson). The feeding deterrents significantly reduced the damage on vine plants by 37% ( $\chi^2=6.25$ ;  $df=284$ ;  $p < 0.001$ ) compared with control, with no statistical difference between the treatments. Furthermore, significantly higher numbers of *C. zealandica* adults were found at the edge of the vineyard block, when compared to the centre ( $\chi^2=2033.59$ ;  $df=198$ ;  $p < 0.001$ ). The above suggests that these feeding deterrents should be applied only to the edge of the vineyard block. If this approach is applied, an overall reduction in types and volume of external inputs is achieved. In addition, this management is in agreement with the spiritual perception of kaitiakitanga.

## 220. Activities within the fight against antimicrobial resistance in food producing animals

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### ABSTRACT

The objective of the study is to make reference to activities, which have recently been carried out by a number of international organizations engaged in the field of human and animal health protection. New legislative modifications concerning antimicrobial resistance are discussed as well. As far as antibiotic policy is concerned, we also described the situation in the Czech Republic with focus on the National antibiotic programme content. The sales of antimicrobials in the Czech Republic has been under surveillance since 2003, now in accordance with European Surveillance of Veterinary Antimicrobial Consumption programme. In 2013 the Czech authorities agreed to participation in the pilot testing project concerning the consumption of antimicrobials on pig farms. National antibiotic programme of the Ministry of Health in the Czech Republic was established in 2009. This programme is based on the valid Action Plan with 11 priority points. There is an active Working Group for antimicrobials of the Ministry of Agriculture which operates in the area of veterinary medicines including medicated feed for food producing animals. Antibiotics play irreplaceable role in medicine, nevertheless there is however a risk, that we might slowly enter post-antibiotic era. For further progress, international cooperation and consistent implementation of measures in regions are necessary.