ASPA 25th Congress Book of Abstract

Angela Gabriella D'Alessandro, Pasquale De Palo, Aristide Maggiolino & Marcello Mele

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Italian Journal of Animal Science

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ASPA 25th Congress

Monopoli (BARI – ITALY), June 13–16, 2023

Guest Editors

Angela Gabriella D'Alessandro, Pasquale De Palo, Aristide Maggiolino, and Marcello Mele

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Monopoli (BARI – ITALY), June 13–16, 2023

#ASPA2023

ASPA 25th Congress Book of Abstract

The 25th congress of the Animal Science and Production Association

"Animal Production Science: Innovations and sustainability for future generation" is under patronage of Loghi patrocini

Monopoli (BARI – ITALY),
June 13–16, 2023

Venue
Torre Cintola Natural Sea Emotions
Località Capitolo – Monopoli (BARI – ITALY)

The 25th Congress of the Animal Science and Production Association (ASPA) is hosted in Monopoli (Puglia) by the University of Bari.

The Congress is entitled "Animal Production Science: innovations and sustainability for future generations" and returns to Puglia after its second edition which was held in Bari 47 years ago.

The congress is hosted at the charming Torre Cintola resort in Monopoli (Bari) from the 13th to the 16th June 2023, a special location also for celebrating the 50th anniversary of our association.

This edition of the ASPA congress has received a total of 467 scientific contributions: 297 oral presentations and 170 posters have been selected. This is a very great result! The highest number of contributions of ever, according to our best knowledge. Moreover, 24 invited lectures will be presented.

The congress has implemented concrete actions for improving its sustainability, like the dematerialization of the posters (available through a smartphone app and on touch screen desks), the increasing of the use of public transportations, the donation of leftover food to charities, as well as the increased the use of zero-mile food. Moreover, the Congress opens a focus also on the role of women in Science, dedicating the congress rooms to neglected scientists poorly celebrated but fundamental for the progress of knowledge and societal development. Finally, a disseminated photo exhibition in the Congress rooms on Marginal Areas is a further opportunity for attendees to deepen the knowledge of Southern Italy landscapes and their relationships with livestock industry.

The scientific program is enriched by 23 main lectures, covering all the main topics. Many thanks for the job to the President of the Organizing Committee, Prof. Pasquale De Palo, and to all the components. I also wish to thank all the members of the Scientific Committee, starting from the President Prof. Angela Gabriella D'Alessandro.

I would like to congratulate and to thank all people that have contributed to the organization of the meeting and that have collaborated in reviewing the summaries. A special thanks to them for what they have done for ASPA and for the Italian Animal Science. A special thank also to Prof. Marcello Mele, Editor-in-Chief of the Italian Journal of Animal Science, for having contributed to the edition of the proceedings.

Nicolò Pietro Paolo Macciotta
ASPA President

ASPA 25th Congress
Monopoli (BARI – ITALY), June 13–16, 2023

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broken horses travelled in single bays, perpendicular to the direction of travel, in most of the cases tied and unloaded by handlers who sometimes used rough handling methods. Instead, the unbroken horses travelled loose, in small groups of familiar horses (3 or 4 horses), stopping and resting in control posts or private farms during their journeys, and always self-unloaded. None of the horses arrived dead or severely lame at arrival, however, other health issues were noticed. Unexpectedly, the prevalence of injuries (24% *vs* 1.5%, $p < 0.001$) and nasal discharge (11.6% *vs* 4.3%, $p < 0.001$) was higher in the broken than in the unbroken horses. This may be due to the journey conditions, which limited the ability to balance and lower their heads, causing injuries mainly at the heads and tails, and respiratory disorders. Contrariwise, gastroenteric disorders, mainly diarrhea, were more frequent in the unbroken (6.6%) than in the broken (0.5%) horses. This could be because those horses stopped more times during their journeys changing more times diets. Our data confirmed that the journey conditions are crucial factors for the welfare of the travelling horses.

Acknowledgements

O464

Assessment of dairy farm welfare using a benchmarking tool

Ioanna Poulopoulou, Thomas Zanon, Mousaab Alrhmoun, Katja Katzenberger, Louis Holighaus and Matthias Gauly

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Animal welfare has become a critical issue for the livestock sector, due to the awareness of the livestock industry following concerns expressed by the public, scientist and NGOs. This has led to the implementation of new tools designed to meet this objective. The present study aimed to use ten animal and resource-based indicators to create an index and develop a benchmarking tool that can be used to dynamically assess the welfare of cattle on farms with different husbandry systems and provide farmers, veterinarians, extension officers and stakeholders reliable information that can be used as a decision support tool for dairy farm welfare. Therefore, 1891 cows from 204 herds housed in free ($n = 111$) and tie stall ($n = 93$) husbandry systems in South Tyrol (Northern Italy) were evaluated using an individual scoring system for each assessed indicator. The analysis performed using generalized linear mixed model of SAS statistical software. The results showed that 17.6 % of herds (36 farms) had an average score below 60 (out of 100) which means that based on the indicators immediate intervention should be adopted to improve welfare. South Tyrol dairy farms performed well in terms of lameness, skin alterations, avoidance behaviour, number and space of boxes,

and dystocia rate scores, while water supply, cow cleanliness status, claw conformations and getting up behaviour offered significant potential for improvement. Substantial differences were observed between housing systems (loose house vs. tie barn), with scores of less than 60 out of 100 points in 9.9 % ($n = 11$) and 26.9%, ($n = 25$) ($p < 0.05$), of the herds kept in free and tie stall, respectively. A slight difference was found when comparing the percentage of herds with high scores, corresponding to 30.6% ($n = 34$) of herds housed in free and 22.6% ($n = 21$) ($p < 0.05$) of herds housed in tie stall housing systems. In addition, it appeared that animals reared on tie stall farms had more frequent problems with body condition, cow cleanliness, and skin alterations. All individual welfare indicators in the top 25% of herds had scores above 80, indicating that this may be a feasible target for free stall and tie stall herds, respectively, to promote good dairy cow welfare. The overall objective must be to adopt measures to improve the scores on all farms closer to this level.

O8

Evaluation of inter-observer reliability of animal-based welfare indicators in the case of trichotomous variables with two or more observers

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This study focuses on the problem of assessing inter-observer reliability (IOR) in the case of trichotomous categorical animal-based welfare indicators and the presence of two or more observers. A modified Animal Welfare Indicators (AWIN) assessment protocol was applied by three observers (A, B and C) on ten dairy goat farms in Piedmont (NW Italy) during the alpine summer grazing season. From these observations and using the body condition score (BCS; scores: −1; 0; 1) as an indicator, we compared the performance of the most popular agreement indexes available in the literature. The IOR was calculated between pairs of observers (A-B; A-C; B-C) using Scott's π, Cohen's K, K_C, K

PABAK, Holley and Guilford's *G*, Holsti's *H*, Krippendorff's α, Hubert's Γ, Janson and Vegelius's *J*, Bangdiwala's *B*, Andrès and Marzo's Δ, Quatto's *S*, Quatto's *S** and Gwet's γ(*AC₁*), and among three observers (A-B-C) using Krippendorff's α, Fleiss' *K*, Hubert's *K*, Andrès and Marzo's Δ, Quatto's *S* and Quatto's *S**. For all the indexes, confidence intervals were calculated using the Bootstrap Method in R software; when they were easy to implement, confidence intervals were also calculated using closed formulas of variance estimates. Our results show that some of the calculated indexes, such as Scott's π, Cohen's *K*, Krippendorff's α, Fleiss' *K* and Hubert's *K* were affected by the paradox effect: when the observed concordance rate (P_0) was high, these indexes sometimes gave very low agreement values (P_{0AB} = 86%; π = 0.23; Cohen's *K*, α = 0.24; P_{0AC} = 76%; π, Cohen's *K*, α = 0.07; P_{0BC} = 83%; π, Cohen's *K*, α = 0.33; P_{0ABC} = 82%; α, Fleiss' *K* = 0.21; P_{0ABC} = 73%; Hubert's *K* = 0.19). Bangdiwala's *B*, Gwet's γ(*AC₁*) and Quatto's *S** were not affected by this phenomenon, and seemed to be the best indexes for evaluating the agreement between two observers for trichotomous categorical indicators (P_{0AB} = 86%; *B*, γ(*AC₁*) = 0.84; P_{0AB} = 93%; *S** = 0.84; P_{0AC} = 76%; *B*, γ(*AC₁*) = 0.73; P_{0AC} = 88% *S** = 0.73; P_{0BC} = 83%; *B*, γ(*AC₁*) = 0.81; P_{0BC} = 92%; *S** = 0.81). Quatto's *S* and Quatto's *S** gave the most reliable agreement values in the case of three observers (P_{0ABC} = 82%; *S* = 0.73; P_{0ABC} = 91%; *S** = 0.79). The Bootstrap Method turned out to be simpler compared to the implementation of closed variance formulas and provided effective confidence intervals for all the considered indexes.

O74

Growth rate and hair cortisol variation of beef cattle in pastoral and silvopastoral systems

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Pasture-based livestock systems are threatened by climate change; indeed, their economic viability is undermined by a reduction in their productivity. In the Mediterranean, the increase in drought periods decreases pasture allowance and quality. Moreover, elevated temperatures, intense solar radiation and high relative humidity cause the decrease of animal intake, which in turn cause a reduction in the performance of extensive livestock systems and the decline of animal welfare. Heat stress can induce hormonal changes, including an increase of stress indicators such as blood and hair cortisol. Mitigation and adaptation

strategies need to be implemented to increase the resilience of extensive livestock systems to cope with climate change. In this study, we investigated the adoption of agroforestry as mitigation and adaptation strategy because the integration of trees in pastoral systems can mitigate heat stress by reducing animal heat load.

In the present experiment, the average daily gain (ADG, kg/day) and cortisol accumulation (pg/mg) were measured in Maremmana beef cattle to compare animal performances according to two different grazing systems (GSs): pastoral (PA) and silvopastoral (SP). The two-years experiment was carried out in a real farm located in southern Tuscany from March to August 2021 and from March to September 2022. In the experiment, 50 and 40 growing Maremmana heifers and steers with comparable initial weight and age were used in 2021 and 2022, respectively, allotting the animals in two groups: PA and SP. In both years, microclimate parameters were monitored throughout the summer to compare the heat load in PA and SP systems with the black globe humidity index.

A linear mixed-effect model was used to determine the effects of GS on ADG and cortisol. In 2021, the highest ADG was recorded in spring for PA, when pasture allowance was greater. In 2022, the overall effect of GS was not significant ($p = 0.46$). ADG was lower in summer respect to spring in 2021 and 2022 with a greater reduction in PA (significant interaction between GS and time, $p < 0.01$). Regarding cortisol, statistical analysis shows a significant difference ($p < 0.05$) between GSs in 2021, and in tendency also for 2022 ($p > 0.05$).

This study shows that agroforestry can mitigate the heat load on grazing animals during Mediterranean summers. However, novel feeding strategies in agrosilvopastoral systems should be further studied to improve the resilience of extensive livestock farms.

O403

Evaluation of fecal and urinary excretion and behavior of Italian Simmental dairy cows during the access to exercise pasture for 2 and 4 hours per day

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Prolonged indoor confinement of dairy cows can have negative consequences on animal health, behavioural expression, welfare and lifespan. Many studies have reported positive effects of pasture