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ASPA 25th Congress Book of Abstract

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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

Table of Contents

MAIN LECTURES 24

ORAL COMMUNICATIONS 297

POSTERS 170

ASPA 25th Congress

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

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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)

procedures in buffalo farm. Data for the background system is based on commercial databases, including EcoInvent (cutoff, v3.6) and Gabi professional, and the Environmental Footprint (EF) 3.0 method was used to quantify environmental impacts. Diet 1 yields the largest impacts in most categories, instead from acidification, ecotoxicity-freshwater, terrestrial eutrophication and particulate matter. On the contrary, the diet 3 outperformed the other scenarios in the remaining categories and it always showed smaller impacts with respect to diet 2. The shifting from diet 1 (Diet A) to diet 3 the farm can reduce the impact of milk production of about 40% in human toxicity-cancer, 14% in the eutrophication of fresh water. The hotspot analysis revealed no significant changes among the three diets: feed production is responsible for the majority of impacts in almost all the categories, while the transportation step becomes relevant regarding climate change, ionizing radiation, ozone depletion and resource use – fossils respectively for 11, 21, 30 and 20%. In conclusion, the application of feeding strategies based on the utilization of self-produced feedstuffs, in particular when the 'zero grazing' technique is applied, reduces the impact for most impact categories.

P437

Preliminary investigation of microbiome in Italian Honeybees (Apis mellifera)

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Honeybees *(Apis mellifera),* unlike other insects, show a highly conserved and specialized gut microbiome, primarily composed of host-adapted bacteria, facultative anaerobes, and microaerophiles that can be transmitted between individuals through social interaction. In honeybees the gut microbiota contributes to food digestion and fermentation of plant components. Furthermore, the bee gut microbiota has been shown to regulate the host immune system and to protect against pathogenic diseases. The aim of this study is to investigate the composition of the intestinal microbiota in a honeybee breeding population selected for 5 years for honey yield, hygienic behavior (HB) and gentleness (GN). To this end 45 colonies, belonging to the honeybee breeding population, were sampled 3 times from June 2021 to October 2021. In total 135 samples were analyzed. For each colony the gut of 10 worker bees were pooled, DNA was extracted and the microbiome was analyzed by sequencing the V3–V4 region in 16S rRNA gene using Illumina technology. Relative abundance analysis showed that *Firmicutes, Protobacteria* and *Actinobacteria* were the most prevalent Phyla, while the most frequent bacterial families were *Lactobacillaceae,* followed by *Orbaceae, Neisseriaceae, Bifidobacteriaceae, Rhizobiaceae* and *Enterobacteriaceae*. Future work will focus on the effect of microbiome composition on honey production and health related traits.

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P495

Understanding Medieval livestock diversity in Viterbo's Tuscia using aDNA data

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Osteological samples were selected from three sealed contexts in Tuscia, dated to the 14th century by stratigraphic position and archaeological materials: two are waste pits in urban (Cencelle) and rural (Celleno) areas, while the third (S. Valentino) is a bovine carcass burial from a former monastic settlement, later reused for agricultural purposes.
Different bones were selected from these archaeological sites to understand the Medieval livestock diversity in Viterbo's Tuscia. Most bones are deeply fragmented due to butchery techniques, so complete metapodials were selected to avoid contamination. The analyses were carried out in the ancient DNA (aDNA) Laboratory of DIBAF (Tuscia University) following stringent precautions, commonly used for this analysis.
DNA was extracted and quantified, genomic libraries were prepared and sequenced at a coverage of 1.5 Gb per sample (10Mreads PE da 150bp). A metagenomic analysis was carried out for an early identification of the species: *reads* were aligned with many livestock species reference sequences and the obtained results confirmed the morphologic indications of archaeozoologists through biometric indications. After that, each sample was

aligned to the specific reference sequences. Further analyses were carried out to evaluate the damage pattern typical for aDNA, and thus exclude contamination of exogenous DNA, for example during the excavations or laboratory practices.
Subsequent analyses were aimed at determining the sex of the animals to better understand the exploitation mode of the period. Mitochondrial DNA (mtDNA) is usually less difficult to amplify than nuclear DNA, so variants on mtDNA and on Cytochrome B (CytB) were investigated in order to establish the haplogroup and thus the origin of the samples.
Taxonomic determinations confirmed the validity of morphometric criteria used to distinguish between sheep and goats. The predominance of females reverses the proportion displayed by the horncore morphology (M 67.9%; F 32.1%). The prevalence of males in cattle suggested a different type of exploitation: the use for meat of adult oxen possibly belonging to a breed not selected for agricultural work. *Sus scrofa* findings were inconclusive because they were degraded by the practice of double boiling, providing indirect confirmation of the species. It was possible to establish the haplogroup of only one sample of *Ovis aries*, which was found to belong to the HB haplogroup, the most common in Europe.

P535

Survey of swordfish (Xiphias gladius) in the Mediterranean Sea off Bagnara Calabra: focus on catch sizes

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The swordfish *Xiphias gladius* (Linnaeus, 1758) is found in the open waters of tropical, subtropical, and temperate oceans of the world, including the Mediterranean Sea.
Swordfish off Bagnara Calabra have been caught with harpoon since 200BC, when, in the summer, these animals come to the surface often in male-female pairs. In this work, we present the data of fishing season, from May to July, of the years 2020, 2021 and 2022 and related to swordfish caught by 2 feluccas and 17 longlines. The area of the studyfalls into the Division 37.1.3 of FAO Major Area 37 and included the Tyrrhenian Sea of the Strait of Messina, between the north-eastern coast of Sicily and the western coast of Calabria up to Bagnara Calabra. All the caught swordfish were subjected to measurement oftotal length (TL) and body weight (BW). A total of 1212 swordfish were caught, of which 908 males and 304 females, with a male/female ratio of 3–1.
Females had a mean TL of 238 ± 15 cm with a mean BWof 68 ± 18 kg, males had a mean TL of 200 ± 14 cm and a mean weight of 30 ± 11 kg, falling within the observed ranges for swordfish caught in these areas. The minimum BW recorded was 12 kg, respecting the minimum catch size of 11.4 kg indicated by ICCAT. In our study, the sex ratio was stable in the 3 years, and showed a value similar to that observed in other studies on Mediterranean swordfish, while differed from the ratios observed in waters around Taiwan and in the Atlantic Ocean (the sex ratio fluctuated from 0.4 to 0.7). Female swordfish are known to reach sexual maturity above 20 kg, so all the females caught in this study were sexually mature. This aspect is due to the characteristics of these fishing waters, defined as 'spawning areas' and these data are also confirmed by the high male/female ratio. In all years the fishing peak occurred in June (36% of the annual catch weight), while the lowest quantity was observed in May (about 29% of the annual total). Although the annual trend of fishing remained stable in the number of fish caught (401,408 and 403 for 2020, 2021 and 2022, respectively), in the 2021 catch there was a decrease of more than 1 t compared to the other two years (16.4, 15.2 and 16.5 t for 2020, 2021 and 2022). In 2021 the female BW was significantly lower ($p < 0.0001$) than in the other 2 year while the weight of the males did not show significant variations. More targeted investigations are needed to protect and valorise this natural resource in the Bagnara Calabra area.

P582

Vermicompost production by slaughterhouse waste

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Due to the great importance of the circular economy in agriculture, the objective of this project was to evaluate the possibility of using cattle slaughterhouse waste (SW) to produce vermicompost (VC). Blood (B), bone-meat (BM), obtained grinding heads and cannons, and ruminal content (RC) were used as substrates. Fresh SW have been mixed together (BM 11.5%, B 23.1% and CR 65.4%) and treated with a dryer machine (ENVICE), for 5 h (maximum temperature reached 120 °C). This treatment allowed to eradicate pathogenic microorganisms and to reduce the fresh weight by 60%. After the heat treatment, the SW were mixed with other substrates and treated with a daily inoculation of

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