

Session 1: Strategies for Managing the Heat-Stressed Dairy Cow

(25 min in total)

Instructor: Dr. Damiano CAVALLINI (Italy)

- **Content:** Presentation on the **physiological impacts of acute heat stress** on dairy cows (reduced feed intake, metabolic disturbances, high breath and heart rate, and decreased milk production). The session introduces key **nutritional strategies** such as adjusting energy density, optimizing fiber and starch balance, increasing water and electrolyte availability, and **supplementing with specific feed additives** (e.g., antioxidants, buffers) to support rumen health and maintain productivity under heat stress conditions.
- **Interactive Segment:** brief presentation of **affordable hi-tech solutions** for the barn/farm for heat stress mitigation on farm and **best management practices** for animal and welfare (by Mustafa, Moroccan commercial company).

Session 2: Precision farming: Wearable Sensors to Improve Management Under Heat Stress Conditions

(25 min in total)

Instructor: Prof. Barbara MERLO (Italy) + Dr. Mustafa FADEL (Egypt)

- **Content:** Role of cows' activity level recorded by **wearable sensors** in detecting heat (oestrus) in dairy cows. Explain how these technologies – such as boli and accelerometers - track **behavioral changes** such as increased movement, mounting activity, or reduced feed intake/rumination; importance of **real time alerts** and the fundamental role of the farmer for **in time interventions**. Common challenges (e.g., false positives), and how integrating sensor alerts with **visual observation** and farm records can optimize reproductive management. Negative **effects of chronic/prolonged heat stress on embryo** in late gestation and on **overall fertility** – e.g., including reduced expression of heat signs, lower conception rates, and early embryonic losses.
- **Interactive Segment:** Participants can **touch a bolus** with their hands and see examples of **patterns of sensor data** (boli) and heat stress alerts.

Session 3 Mastitis: Best Milking Practices, Prevention Of Inflammations and Their Early Detection

(25 min in total)

Instructor: Prof. Angela COSTA (Italy)

- **Content:** Presentation on the **key risk factors for mastitis** at the milking stage, including improper milking routines, **equipment hygiene**, and environmental conditions. SCC in individual vs bulk milk. The internationally recognized best practices for **teat preparation**, oxytocine release, milking machine maintenance, and **post-milking hygiene** to reduce infection risks. Visual detection methods of subclinical cases, such as observation of milk consistency, **California Mastitis test**, etc. Effect of mastitis on the single cow's productivity, on **milk quality** and high bulk milk SCC as a penalties applied by dairy companies due to **high SCC and presence of antibiotics**.
- **Interactive Segment:** Participants can analyze short videos showing robotic milking steps; discussion of the survey: both correct and incorrect milking practices adopted.

Session 4 – From calf to heifer: how good cares in early life can result into profit

Instructor: Prof. Angela COSTA (Italy)

(30 min in total)

- **Content:** Overview of the **biological function of colostrum** in providing **passive immunity**, the window of **gut closure**, risk factors for **failure of passive transfer (FPT)**, and the long-term impacts on the replacement heifers, e.g., growth, disease resistance, age at puberty, and future milk production.
- **Interactive Segment:** Presentation of the refractometer to be used at first meal for colostrum quality evaluation and scoring system to evaluate calf at birth. Discussion of the survey: both correct and incorrect calves' care practices adopted.

Session 5: Economic balance of the dairy farm and the cost of diseases

Instructor: Dr. PhD student Istanbul University (Turkey)

(20 min in total)

- **Content:** **costs for the farmer** today and **economic impact of diseases** such as lameness, mastitis, etc, and cost of **infectious disease** (brucellosis, lumpy skin disease, etc.); importance of decision-making, attention to **biosecurity** in dairy farms with examples of comprehensive set of measures to protect herd health: **quarantining** and testing new or returning animals before entry, restricting and controlling visitors and vehicles with clean clothing and boots. **Relevance of vaccination** campaign.
- **Interactive Segment:** discussion face-to-face about economic loss due to current infectious diseases/past infectious diseases for farmers.