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SYMPOSIA AND ORAL SESSIONS

ADSA Production Division, Dairy Reproductive Terminology Workshop

426 Reproductive terminology workshop. E. R. Jordan*[1], J. S. Stevenson[2], P. M. Fricke[3], and M. W. Overton[4], [1]*Texas A & M University*, *Dallas*, [2]*Kansas State University*, *Manhattan*, [3]*University of Wisconsin*, *Madison*, [4]*University of Georgia*, *Athens*.

Reproductive physiologists have developed a number of different synchronization programs and measures for reproductive analyses. Terminology, however, is not being applied consistently and uniformly in the scientific literature, textbooks, and popular press. Advances in reproductive biology of domestic species and adoption of the latest technical developments often are hindered by confusion and inconsistency regarding terminology, nomenclature, and specific definitions used to describe the protocols, treatments, or clinical conditions. During this workshop, a standardized set of terminology will be presented and discussed with the objective of developing a consensus, standardized reference to serve as a guideline for nomenclature use in manuscripts, textbooks, and popular press articles. Examples of the nomenclature to be discussed include: Ovsynch, Select Synch, Select Synch plus CIDR, Presynch, Presynch + Ovsynch, Co-Synch, CIDR Synch, CIDR + Co-Synch, Resynch with CIDR, Resynch at pregnancy diagnosis, % compliance, compliance rate, pregnancy rate, palpation pregnancy rate, AI-submission rate, conception %, conception rate, rate vs. risk, embryonic mortality, fetal mortality, abortion, retained fetal membranes, melengesterol acetate (MGA) + prostaglandins, MGA Select, MGA with natural service, 7-11 Synch, metritis, endometritis, pyometra, and daughter pregnancy rate (DPR). Standardizing reproductive physiology nomenclature, definitions, and descriptive terminology should facilitate comparisons across studies, and most importantly, provide dairy producers, veterinary practitioners, and scientists more precise measures of the utility of the observations when new reproductive technologies are reported and then applied in the field.

Key Words: Reproduction, Terminology, Nomenclature

ARPAS Symposium: Assessment and Management of Feedstuff Variation in Dairy Nutrition

427 How can dairy nutrition models deal with uncertainty? R. A. Kohn*, *University of Maryland*, *College Park*.

Diet formulation models for dairy cattle require estimates of feed composition provided as table values or from feed analysis. In addition to feed composition, models use predicted milk production and body weight for when the ration will be offered, and internal constants like digestibility coefficients for specific nutrients. Current models do not account for uncertainty of feed analysis, animal performance, or internal constants; they simply overestimate requirements by applying "safety" factors, or adjustments above estimated requirements to compensate for the risk of underfeeding. Optimal safety factors can be calculated by balancing the increased ration cost against the potential loss in milk income from the risk of underfeeding due to uncertainty. For the previous 5-yr average milk and feed prices, the optimal safety factor for diet CP was 35% of the SD in predicted requirements and supply. At half the cost of feed protein relative to milk, the optimal safety factor is 86% of the SD in feed CP supply. Multiple safety factors can be added as squared terms to account for uncertainty in feed analysis, animal production, intrinsic model uncertainty, and variation among animals. For example, if cows are fed 50% corn silage (9% CP; SD = 0.9%) and 50% grain mix (25% CP; SD = 1.0), the final ration is 17% CP with SD = 0.67 $\{\sqrt{(0.5^2 \times 0.9^2 + 0.5^2 \times 1.0^2)}\}$. Only considering variation from CP analysis would optimally target 17.2% CP in the diet $\{17 + 0.35 \times 0.67\}$. If uncertainty from other sources sums to an additional unit of CP as a fraction of feed DM, the total safety factor would be 0.42 $\{0.35 \times \sqrt{(1.0^2 + 0.67^2)}\}$ and the diet should target 17.4% CP. Common pitfalls in use of safety factors are 1) failure to understand that variance of ration composition is less than the variance for individual feeds, 2) failure to square safety factors before adding, and 3) using safety factors that are greater than optimal. These mistakes result in overfeeding of nutrients beyond the economic optimum. Explicitly understanding the sources of uncertainty in diet formulation and feeding would enable more accurate compensation for uncertainty.

Key Words: Ration formulation, Forage analysis