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RESEARCH ON THE INFLUENCE OF CALVING SEASON ON MILK YIELD, CHEMICAL COMPOSITION AND SOMATIC CELLS COUNT IN DAIRY COWS

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INTRODUCTION: Milk production in dairy cows is influenced by multiple factors, including the individuality, lactation length, photoperiod, cold and heat stress, seasonal changes in forage availability and quality, lactation persistency and the cow's genetic background. It is well-established that approximately 75% of milk yield variation is attributed to environmental factors, while only 25% is due to genetics.

The **objective** of this study was to evaluate the influence of calving season on milk yield and milk composition (fat, protein, lactose, total solids, urea and casein), as well as somatic cell score (SCS), during the first 100 days of lactation, in Holstein dairy cows managed under temperate continental conditions.

MATERIALS AND METHODS: The study was conducted at the Research and Development Institute for Bovine Balotesti on 40 multiparous Romanian Black and White cows housed under identical conditions.

Cows were grouped by calving season: spring, summer, autumn and winter (10 cows/season). Milk yield during the first 100 DIM was recorded following ICAR guidelines and corrected for parity. Milk composition (fat, protein, lactose, solids, urea, casein) was assessed from the first three test-day records following calving. Somatic cell score (SCS) was calculated as SCS = $\log_2$(SCC/100,000) + 3.

Figure 1. SLICK gene carrier Holstein calf

RESULTS: Spring calvings were associated with higher milk yields, while winter and autumn calvings resulted in the lowest production ($p \leq 0.05$). Autumn-calving cows showed the best udder health, with the lowest somatic cell scores, significantly better than those calving in summer and winter ($p \leq 0.05$). Solids contents were highest in cows calving during autumn and winter, while lactose was significantly higher in winter compared to summer ($p \leq 0.05$). Although slight numerical differences were present, no statistically significant variation in fat and protein percentage were detected between seasons ($p > 0.05$).

CONCLUSION: Calving season had a clear impact on early lactation performance. Notably, the SLICK1 mutation offers a promising adaptation strategy, improving thermotolerance without compromising milk yield.

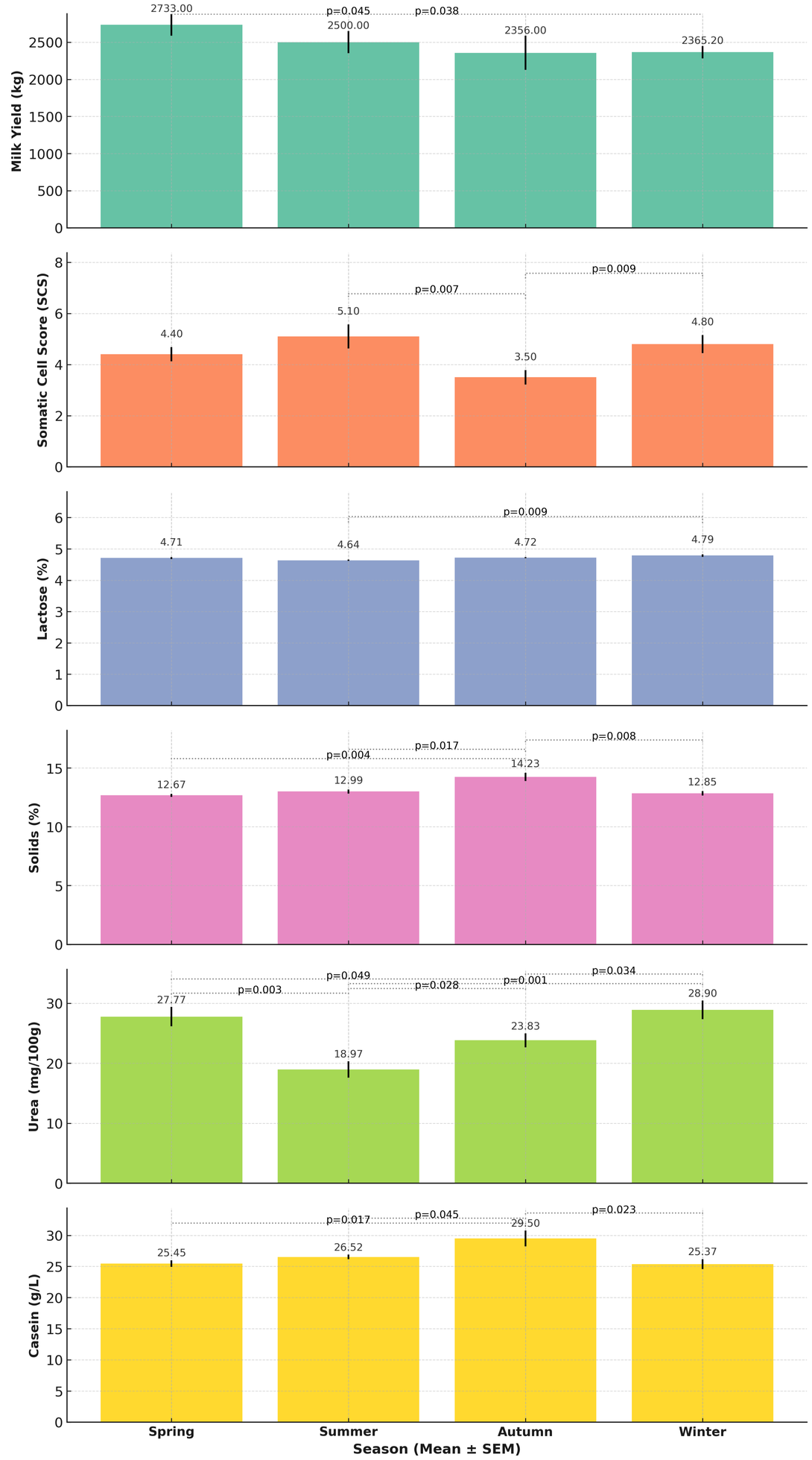

Figure 2. Calving season effects on milk yield, chemical composition and somatic cells count

Significant differences between seasons are indicated by dotted gray lines with p-values.