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奶牛乳中脂肪蛋白质比和尿素氮含量与繁殖性能的相关性分析

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Correlation Analysis Between Milk Fat to Protein Ratio, Milk Urea Nitrogen Content and Reproductive Performance in Cows

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摘要 本试验旨在探索奶牛配种前1周内乳中脂肪蛋白质比(milk fat to protein ratio, FPR)和尿素氮(milk urea nitrogen, MUN)含量对繁殖性能的影响。选择产犊时间接近的第1胎荷斯坦牛1 460头,于配种前1周采集乳样,测定日产奶量、乳成分和MUN含量,并测定试验牛只第1次发情配种泌乳天数、配种情期数、妊娠率、妊娠泌乳天数等繁殖性能指标,用多因素方差分析、Logistic回归分析以及相关和回归分析方法分析FPR和MUN含量与繁殖性能的关系。结果表明:试验牛只配种前1周内FPR和MUN含量分别为(1.35±0.28)和(10.61±2.68) mg/dL。FPR对第1次发情配种泌乳天数的影响达到极显著水平($P<0.01$),对其他繁殖性能指标无显著影响($P>0.05$);MUN含量对第1次发情配种泌乳天数的影响达到极显著水平($P<0.01$),对配种情期数、妊娠率的影响达到显著水平($P<0.05$),而对妊娠泌乳天数无显著影响($P>0.05$)。FPR与第1次发情配种泌乳天数和妊娠泌乳天数呈极显著负相关($P<0.01$),MUN含量与第1次发情配种泌乳天数及妊娠率呈极显著正相关($P<0.01$)。MUN含量对第1次配种以及在配种前2个发情周期内配种是否妊娠的影响达到显著水平($P<0.05$)。配种前1周内MUN含量对头胎奶牛配种情期数和第1次发情配种泌乳天数有显著影响,因此,对MUN含量的测定和分析可以作为奶牛繁殖性能的预测和繁殖管理的手段之一。

关键词: 乳中尿素氮 乳中脂肪蛋白质比 奶牛 繁殖性能

Abstract: To explore the effects of milk fat to protein ratio (FPR) and milk urea nitrogen (MUN) content in 7 days before service of cows on reproductive performance, a total of 1 460 of the first lactation Holstein cows which calving in the close periods were chosen. The milk samples were collected in 7 days before service, and the daily milk yield, milk composition and MUN content were detected for the selected cows. At the same time, the reproductive performance (days in milk for the first service, number of service, pregnant rate, and days in milk for pregnancy) of these cows were detected. The effects of FPR and MUN content on the reproductive performance were analyzed using multivariate analysis of variance, Logistic regression analysis, correlation and regression analysis. The results showed as follows: the FPR and MUN content in 7 days before service were (1.35±0.28) and (10.61±2.68) mg/dL, respectively. The FPR had a significant effect on days in milk for the first service ($P<0.01$), but had no significant effect on the other reproductive performance indexes ($P>0.05$). The MUN content had significant effects on days in milk for the first service ($P<0.01$), number of service and pregnant rate ($P<0.05$), but had no significant effect on days in milk for pregnancy ($P>0.05$). The significantly negative correlations between FPR and days in milk for the first service and days in milk for pregnancy were observed ($P<0.01$). There were significantly positive correlations between MUN content and days in milk for the first service and pregnant rate ($P<0.01$). The MUN content had significant effects on pregnant or not in the first or the first two estrous cycles ($P<0.05$). The MUN content in 7 days before service for the first lactation Holstein cows has significant effects on number of service and days in milk for the first service, and it can be used as one of the methods in the prediction and management of dairy cattle reproductive performance.

Keywords: MUN, FPR, cows, reproductive performance

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