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Effects of rearing, sire and calving season on growth and milk efficiency in dairy cows

J. Brouček, P. Kišac, A. Hanus, M. Uhrinčat, V. Foltys

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32 primiparous cows were used. We tested the hypotheses that live weight and milk efficiency were influenced by the system of rearing from the second week of life to weaning, by the sire, and by the season of calving. Three groups were created according to a rearing system (A – pens with automatic drinking cups, H – individual huts and N – pens with nursing cows). Primiparous cows originated from four sires and were divided according to the season of calving (spring, summer, autumn and winter). Group N had the highest LW (540.5 kg) and group A the lowest (504.8 kg) in the 1st month of the first lactation. In the 10th month of lactation, the weights were 554.5 kg (A), 566.9 kg (H), and 575.1 kg (N). ADG from the 2nd to 10th month of lactation were statistically different between the groups. Other significances were found by the comparison of animals according to sires ($P < 0.05$). Group N had the highest milk efficiency almost in all months of lactation. The lowest production was recorded in group A. Daughters of the sire F₃ reached the highest milk production except the seventh and eighth months. Significant differences were calculated in the 5th and in the 6th month between daughters of sires F₃ and F₁. Dairy cows calving in summer showed the lowest milk yield in the 3rd, 4th, 7th and 9th month. The most productive were cows calving in WIN and in SP. Group N achieved the highest production of milk for 305-day lactation (N 6 894.1 ± 879.8 kg) and animals fed from automatic drinking cups the lowest (A 5 757.5 ± 865.5 kg). A similar trend was recorded also in FCM milk. The content of fat was highest in group A (4.1%) and the lowest in group H (3.57%). Animals of group N produced highly significantly more proteins than group A (215.3 kg versus 180.9 kg, $P < 0.01$). Group A produced the significantly lowest amount of lactose and nonfat solids over 305 days of lactation. The content of total solids was the highest in group A. Production of total solids was the highest in group N and the lowest in group A (846.5 kg versus 749.8 kg; $P < 0.05$). The effect of the sire lineage was significantly expressed in milk production and in the content of fat, proteins, lactose, nonfat solids and total solids. The production of milk, proteins, lactose, nonfat solids and content of fat and lactose for 305-day lactation statistically differed according to the season of calving. Dairy cows calving in WIN yielded the highest amount of milk and proteins, cows calving in SP produced the highest amount of lactose and nonfat solids. Dairy cows calving in SU produced the lowest amount of milk, protein, lactose and nonfat solids.

Keywords:

dairy cows; rearing; sire; season of calving; growth; milk production; milk composition

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Contact

Ing. Gabriela Vladýková
 Executive Editor (Editorial publication)

e-mail: cjas@gazv.cz

Ing. Kateřina Kheilová
 Executive Editor (submission editorial system)

e-mail: cjas@af.czu.cz

Address

Czech Journal of Animal Science
 Czech Academy of Agricultural Sciences
 Slezská 7
 120 00 Praha 2
 Czech Republic