

EFFECTS OF TEMPERATURE OF MILK REPLACER AND METHOD OF FEEDING ON THE PERFORMANCE OF HOLSTEIN VEAL CALVES

PAUL FLIPOT, GASPARD LALANDE, and M. H. FAHMY

Canada Agriculture, Research Station, Lennoxville, Québec.

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ABSTRACT

The influences of the temperatures of milk replacer (warm, 37 C; room, 18 C; or cold, 1.5 C) and of feeding method (limited vs. ad libitum intake) on body weight gain, age at slaughter (100 kg liveweight), dressing percentage, and feed efficiency were studied on 30 and 36 Holstein male calves raised in 1970 and 1971, respectively. Calves reared on cold milk grew 0.124 and 0.142 kg/head per day ($P < 0.05$) slower than those reared on milk at room or warm temperatures, respectively. Calves reared at room temperature had 0.12 kg (dry matter/body gain) lower feed effi-

ciency and about 0.6% higher dressing percentage. Calves fed ad libitum were superior to those fed limited intake in daily gain (0.043 kg), age at slaughter (4.3 days), dressing percentage (1.8%, $P < 0.05$), but were inferior in feed efficiency (0.27 kg). The present findings indicated that feeding limited intake of cold milk should be avoided because this treatment resulted in high mortality and several cases of inanition. Year differences were significant ($P < 0.01$) on dressing percentage and feed efficiency.

RESUME

On a étudié l'influence de la température du substitut du lait (chaud, 37 C; à la température de la pièce, 18 C; ou froid, 1.5 C) et du mode alimentaire (restreint vs. ad libitum) sur la croissance corporelle, l'âge à l'abattage (100 kg), le rendement en viande, et l'efficacité alimentaire. Pour ce faire on s'est servi de 30 veaux mâles Holstein en 1970 et 36 en 1971. Les veaux nourris au lait froid ont fait des gains moyens journaliers de 0.124 et 0.142 kg/tête ($P < 0.05$) inférieurs à ceux nourris au lait chaud, ou à la température de la pièce. Les veaux nourris à la température de la pièce ont eu une efficacité alimentaire de 0.12 kg (matière sèche/gain de poids) inférieure et un rendement en viande d'envi-

ron 0.6% supérieur aux deux autres. L'alimentation sans restriction a donné un gain journalier (0.043 kg), un âge à l'abattage (4.3 jours), et un rendement en viande (1.8%, $P < 0.05$) supérieurs à ceux de l'alimentation restreinte. Par contre, les veaux nourris avec restriction ont consommé moins d'aliment par livre de gain (0.27 kg). Les résultats actuels démontrent que l'on ne devrait pas restreindre l'alimentation au lait froid, puisqu'il en résulte un fort pourcentage de mortalité et plusieurs cas d'inanition. Il y a eu une différence significative ($P < 0.01$) entre les années, pour le pourcentage de rendement et l'efficacité alimentaire.

INTRODUCTION

The use of cold milk or milk replacer in rearing young calves, especially when combined with an automatic feeding system, might be an effective way of reducing the daily labor required. Many studies using calves (Owen and Brown 1958; Tayler and Lonsdale 1969), and lambs (Large and Penning 1967; Brisson and Bouchard 1970) have shown that young ruminants reared on cold milk had satisfactory weight gain, feed efficiency, and fewer rearing troubles as compared with those fed traditional warm milk.

The present investigation was carried out to compare the performance of calves fed milk replacer at three different temperatures using two systems of feeding.

MATERIALS AND METHODS

Sixty-six Holstein male calves, 3-5 days of age, purchased locally during 1970 and 1971, furnished the material of the present $2 \times 2 \times 3$ factorial experiment. On arrival at the Research Station, the calves received 200,000 I.U. of penicillin G procaine, 200,000 I.U. of penicillin G benzathine, and 0.5 g of dehydrostreptomycin sulfate to minimize the stress of transportation. The calves were allotted to the