



Veal calves' clinical/health status in large groups fed with automatic feeding devices

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ABSTRACT - Aim of the current study was to evaluate the clinical/health status of veal calves in 3 farms that adopt large group housing and automatic feeding stations in Italy. Visits were scheduled in three phases of the rearing cycle (early, middle, and end). Results showed a high incidence of coughing, skin infection and bloated rumen particularly in the middle phase while cross-sucking signs were present at the early stage when calves' nibbling proclivity is still high. Throughout the rearing cycle, the frequency of bursitis increased reaching 53% of calves at the end. The percentage of calves with a poorer body condition than the mid-range of the batch raised gradually as well, likely due to the non-proportioned teat/calves ratio that increases competition for feed and reduces milk intake of the low ranking animals. The remarked growth differences among pen-mates and the mortality rate close to 7% showed by the use of automatic feeding devices for milk delivery seem not compensating the lower labour demand, therefore its sustainability at the present status is doubtful both for the veal calves' welfare and the farm incomes.

Key words: Veal calves, Welfare assessment.

Introduction – The prevalent type of housing in the veal calves farming in Italy is the adoption of small groups of 5-7 animals, bucket or trough fed. In this system main factors that impair welfare are low space allowance, slippery and hard slatted floor, and poor air quality (Cozzi *et al.*, 2008). Large-group housing and teat-based computerized milk feeding stations show a further risk factor that is the insufficient teat/calves ratio. This inadequate proportion, increases cross-sucking, aggressions and competition among calves and reduces feeding time and milk intake (Jensen, 2003). It was aim of the current study to evaluate the clinical/health status of veal calves in farms that adopt large group housing and automatic feeding stations in Italy.

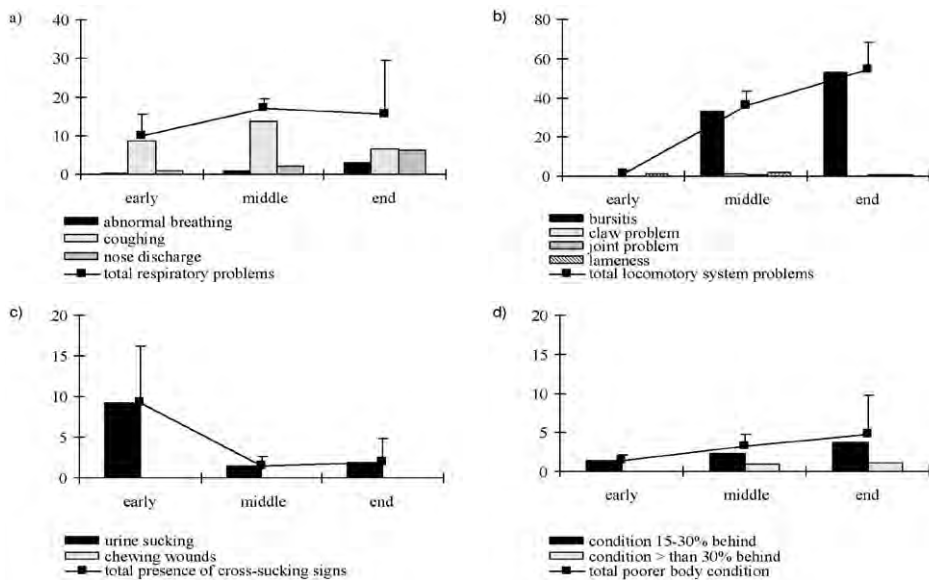
Material and methods – Calves' clinical/health conditions were evaluated in 3 farms that adopt large group housing and automatic feeding system through the application of a welfare assessment scheme. Two farms reared male Italian Friesian calves while one fattened Simmental calves imported from Romania. Calves were housed in group fully-

slatted-floor pens containing about 40 animals each. Each calf was fed the liquid diet by an automated computer-controlled feeding station which recognised the individual by a microchip and the teat/calf ratio was one per group. The weekly average intake of skim milk powder was about 13 kg/head while an increasing amount of solid feed was distributed throughout the fattening period reaching in total more than 100 kg/head/cycle. This amount was largely above the minimum imposed by the regulation in force for the welfare of calves (Commission Decision 97/182/EC). In each farm an interview to the farmer and 3 clinical/health visits, based on direct animal observations, were applied by one trained observer. In order to follow the trend of the health status over a fattening cycle of 24 weeks, the visits were scheduled at 15-20 d (early), about 85 d (middle) and 150 d (end) of rearing. During each clinical/health visit the number of calves showing respiratory problems (abnormal breathing, coughing and nose discharge); bloated rumen; skin infection; locomotory system problems (lameness, bursitis, claw and joint problems); cross-sucking (signs of urine sucking and chewing wounds); and poorer body condition than the mid-range of the batch (15-30% behind and more than 30% behind) were recorded. These data were expressed as percentage of calves with a given problem over the number of animals observed per farm. Data were submitted to descriptive statistics using SAS (2001).

Results and conclusions – Farmers reported in the interview an increased percentages of problem calves and a mortality rate (% of calves died/total calves housed) of 2.8, 4.8 and 6.9% at the early, middle, and end stage of rearing, respectively. The mortality was one of the factors that decreased the number of calves observed from the early stage to the end of the fattening (144±59 vs. 126±76), even if 35 calves were sold prior to the last visit. The main respiratory problem (Figure 1.a) was coughing, particularly present in the first two stages of the fattening. The frequency of calves with bloated rumen was 0% in the early phase, showed a peak at the middle (6.4%) and decreased to 4.8% at the end. This trend could be explained by the increasing amount of solid feed provided to calves, while the slight reduction at the end suggests a probable adaptation response. Skin infection signs followed a similar development over time to bloating (0% early, 14.0% middle and 9.5% end) that could be reasonably explained by a mycosis spreading among the pen-mates. The reduction of the incidence of this parameter observed in the last phase was likely due to an improvement of the immune response of the calves, rather than to the implementation of efficient medical treatments that would completely boost the problem. Locomotory problems regarded primarily signs of bursitis (Figure 1.b) that showed an increasing frequency during the fattening. This is a common problem for veal calves probably due to prolonged stressful conditions for carpal joints given by hard wooden or concrete floors and in large groups it could also be related to a prolonged lying on sternum for the fear of being walked over by other pen-mates (Cozzi *et al.*, 2008). Urine-drinking signs were more relevant than signs of chewing wounds that were completely absent at any stage of the fattening (Figure 1.c). Urine sucking signs were recorded with higher frequency in the early phase likely due to the needs of the fulfilment of initial calves' nibbling proclivity (Veissier *et al.*, 1998). More calves with a poorer body condition than the rest of the batch were recorded with the proceeding of the fattening implying a worsened homogeneity of the batch (Figure 1.d). This might confirm the inadequate teat/calves proportion which increases aggressions and competition for feed and reduces feeding time and milk intake of the low ranking animals remarking their

growth difference (Jensen, 2003). The low homogeneity of the batch and the high mortality rate of the calves reared in large groups with the automatic milk delivery system do not seem to compensate the lower labour demand for feed delivery. Sustainability regarding animal welfare and farm incomes of this system in veal calves farming at the present status is therefore doubtful, unless one of the main risk factors such as the insufficient teat/calves ratio will be overcome.

Figure 1. Percentage and standard deviation of calves showing signs of a) respiratory problems; b) problems at the locomotory system; c) cross-sucking; and d) poorer body condition than the mid-range of the batch at different stages of fattening (early, middle, end).



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