



## ASPA 23rd Congress Book of Abstracts

Fulvia Bovera

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(2) system capacity, i.e. number of buffaloes that can be milked by AMS per year; (3) number of milking-failure visits, i.e. robot failures to attach milking cluster. The assessment of milk traits was performed by comparing (ANOVA) over the whole lactation milk yield and quality of buffaloes milked with the traditional tandem (TT, 45 cows) or the AMS (45 cows). The cows milked by the AMS had higher number of milkings/days and higher milk yield ( $p < .05$ ) than those milked with TT system, whereas no differences were found for milk composition. The analysis of system capacity was carried out over two years by comparing (ANOVA) the performances of buffaloes milked in AMS serving 50 or 70 cows. Results highlighted that the number of buffaloes per robot may be increased up to 70 without impairing milking performance ( $p < .05$ ), so making it possible to recoup the initial investment earlier. Factors causing milking-failure visits were studied over one year by installing, for each AMS, one camera on the robot arm applying teat cups and another one on the pre-selection gate. The video-recordings were downloaded and analysed remotely every week. The number/year of milking failure visits were  $4053 \pm 550$  (mean  $\pm$  SD), corresponding to about 10% of AMS working time. About 27% of the failure visits was due to the cow's behaviour, while 72% was related to malfunction of the milking robot (e.g. unexpected size, and/or orientation of one or more teats; obstructed view of the teats). It follows that the operational and functional aspects of AMS in buffaloes can be better adapted to the buffalo's characteristics. Overall results indicate that AMS may be a suitable alternative to conventional milking, offering new management prospects for buffalo farming.

## O048

### First evaluation of the infra-red thermography as a tool for the detection of mechanical stress on cow udder teat due by milking

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Faults in milking machine (e.g. incorrect vacuum, pulsation setting) or in milking management (e.g. overmilking, incorrect coupling between liner and teat) can mechanically stress the teats that can appear red or purple-coloured after the cluster removal. These colour changes can be associate with a change of blood circulation and fluid retention of the teat tissue. This effect, when occurs, can

be at the basis of a teat skin surface temperature (SST) increase that could be detected, automatically and in a contactless way, by an infra-red thermography. In order to test this hypothesis, 40 thermographic images were collected from a herd of Holstein Friesian dairy cows. Thermographic images were acquired during a milking session, 30–60 seconds after the cluster removal. For each cow, a thermographic image of the lateral part of the udder was collected using a commercial infra-red camera positioned at udder level – at a distance of circa 0.5 m – in accordance with the layout of the milking system (a  $2 \times 12$  herringbone parlour). For each thermographic image, and for each couple of udder teats visible in the image, three SSTs were calculated. They were the maximum temperatures measured in three rectangles (of  $5 \times 25$  pixels) manually positioned at the base ( $T_{\max,B}$ ), at the centre ( $T_{\max,C}$ ) and at one centimetre over the tip of the teat ( $T_{\max,T}$ ). Data calculated, were statistically investigated and related to the colour changes of each teat classified by a researcher as pink, red or purple-coloured. Results obtained have shown that mean values of the maximum temperatures, measured at the base, centre and tip of the teat, increase significantly when the colour of the teat changes – after the milking – from pink to red or purple ( $T_{\max,B}$ :  $34.19 \pm 0.14$ ;  $35.11 \pm 0.15$ ;  $35.68 \pm 0.20$  –  $T_{\max,C}$ :  $35.12 \pm 0.15$ ;  $36.19 \pm 0.14$ ;  $36.53 \pm 0.16$  –  $T_{\max,T}$ :  $36.26 \pm 0.13$ ;  $36.72 \pm 0.14$ ;  $37.31 \pm 0.18$  – means values and standard errors of teats classified as pink, red and purple). This finding suggests that a colour change of teats – after the cluster removal – might be classified through an infra-red camera, without the need of a visual inspection performed by a technician/milker. Thus, with this technology, it should be possible to develop an automatic system able to detect possible cases of teat stress. A reduction of these negative cases could allow, as a long term effect, a better management of the milking and therefore to increase the general health of a heard of dairy cows.

## O049

### Milk production of Sarda suckler cows with different calving period

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In the high hill and mountain range of Sardinia the suckler beef industry is traditionally based on the small framed Sarda cow grazing all year around. The milk yield of cows is one of principal factors influencing growth rate and weight at weaning of their calves. With the aim to enhance the knowledge on the performance of calves born during different seasons, the current study evaluated the effect of calving season on milk production of Sarda cows in a rangeland-based beef livestock system. Twenty