

Social Network Analysis and management of calves and dairy cows

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Social networks in animal species may indicate social stress and social support that are important for welfare. A recent finding shows that “Calves seem to form preferential relationships before 3.5 months of age. Keeping cattle together from an early age seems beneficial for them”. We tried to confirm this statement using a Social Network approach and a group of 10 Holstein-Friesian calves (6 males/4 females) aged 3 to 4 months. Individual automated location registration (X-Y position) was used to calculate the nearest neighbour of each calf in the pen (4 x 11 meters). Based on the nearest neighbour matrix positive and negative associations were calculated using standardized residuals (MatMan). The residuals are used as input for social network analysis (SNA) of the positive and negative associations of the calves using Ucinet. Data were analysed per day excluding the dark period (21-06 hrs.), when calf activity was low. To challenge the calves and their relationships the feeding regime was changed from dried alfalfa (day 1-6) to wet silage (day 7-12). Comparison of day 6 and day 7 shows that the challenge changed daily habits and increased for instance daily walking from 298 to 418 meter per day (paired T-test, P0.05), indicating instability of the social network. We conclude that social networks might be important for the welfare management of calves and that automatic recording and follow-up management actions are feasible in the near future. More importantly, suggestions are made to use Social Network information in adult dairy cow management.

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